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# NORTHROP NEWS

NORTHROP NORTRONICS

Published biweekly by Northrop Corporation, Beverly Hills, California

Vol. 25, No. 1

January 18, 1967

## LBJ Names Sullivan to Commission

Dr. George H. Sullivan, director of Life Sciences at Northrop Nortronics, has been appointed by President Johnson to the newly formed National Commission on Marine Sciences, Engineering and Resources.



The President announced the formation of the 15-man group last week, and named 15 eminent scientists from throughout the country to serve on it.

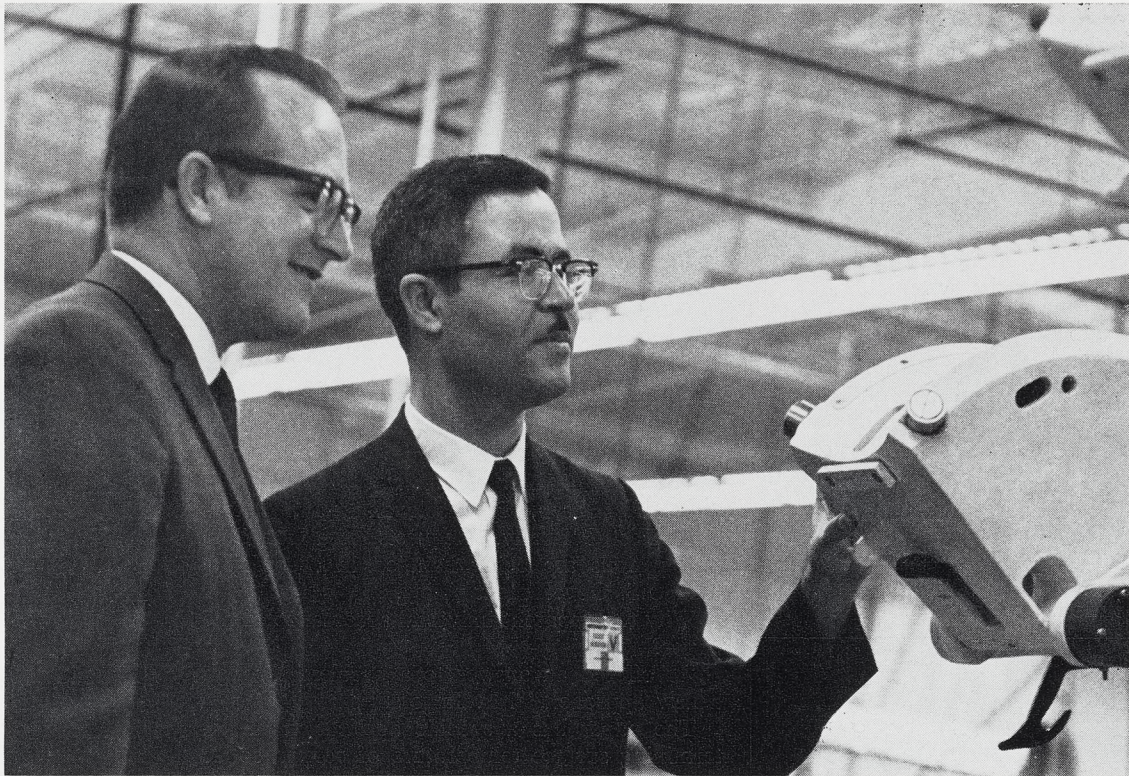
Dr. Sullivan According to the President's Science Advisory Committee, the Commission will make a comprehensive investigation and study of all aspects of marine science, in order to recommend a plan for a national oceanographic program which will meet present and future needs.

Dr. Sullivan, 40, is a graduate of both the Georgetown University Medical School, in 1959, and the U.S. Naval Academy at Annapolis, Maryland, where he received a bachelor of science degree in electrical engineering, in 1948.

As director of Life Sciences, he has been responsible for many programs directly related to effective use of the sea. Among them are systems engineering support of the U.S. Navy; the Man-in-the-Sea Project, including the biomedical problems of survival in a sea environment; development of advanced protective and anti-exposure garments; and studies of marine algae for human nutritive value.

Nortronics is prime engineering support contractor in the Navy's five-year Deep Submergence Systems Project (DSSP), a program aimed at improving the Navy's capabilities in underwater operations.

As an electrical engineer as-  
(See DR. SULLIVAN, page 6)



VIEWING HAWK ASSEMBLY line at Nortronics Anaheim recently was Mohammed Dahman (right), official representative of the Kingdom of Saudi Arabia. His escort was W. A.

Rothwell, Nortronics Hawk program manager. Raytheon is prime contractor for Hawk weapon system. Nortronics produces launchers and loaders.

## BID TO BOEING

### Northrop Plans for SST

Last month the Federal Aviation Agency (FAA) announced The Boeing Company has been selected to continue developmental efforts on the nation's supersonic transport (SST) program.

The selection followed detailed evaluation of two SST design concepts perfected over a 30-month period of intensive design effort.

The Boeing Company proposed a movable-wing SST design.

Lockheed Aircraft, the second finalist in the lengthy design competition, proposed a fixed delta-wing design.

While naming Boeing the winner of the design competition, the brief FAA announcement emphasized "no decision has been made as to whether to proceed into the next phase of the SST program which is prototype construction and flight test." The announcement indicated the program "will

be extended on a month-to-month basis."

Northrop Corporation has already been working on this important aerospace endeavor and is preparing to participate further as needed.

As Boeing moved forward in its design work on the SST, it announced plans for utilizing the services of Northrop Norair and five other aerospace firms to perform major work if its bid for the developmental task was successful. (Northrop NEWS, August 17, 1966.)

Boeing called this its "total program" plan.

It called for Norair and the other firms named to take part in some design efforts and the production of key test components to gain valuable experience and thereby be assured the opportunity of continuing in possible production efforts on the SST.

Norair was asked to work on the design and fabrication of body structures for the SST which entail milling, forming and fabrication of titanium alloys.

The 309-foot long SST, which will cruise at speeds of approximately 1,800 m.p.h., will be fabricated almost entirely of titanium.

Northrop Norair is recognized as a leader in the aerospace industry in titanium manufacturing technology. Over the past decade this technology has been perfected at Northrop through an extensive research and development effort as well as actual production of complex titanium alloy assemblies.

Early last year The Boeing Company contracted with Northrop Corporation to employ its extensive talents in titanium production to fabricate 750 parts and components to be assembled into a forward fuselage, or cabin, test section for the SST. Also to pro-

(See SST, page 6)

## Service Awards Show Increase At Nortronics

The final four months of 1966 saw a record number of Northrop Corporation service awards going to Northrop Nortronics personnel assigned to West Coast operations.

During this period seven employees completed their 25th year of Northrop service to become eligible for coveted 25-year service pins. Ten employees became eligible for 20-year service pins and 88 for 15-year service pins.

As a group they accounted for 1,695 years of working with Northrop.

Eligible for 25-year service awards in September, October, November and December were Charles Furman, Oscar Fogle, Paul Harlow, Dale Moreland, Robert Shaftel, Emil Kaltoff and William Cozad.

Twenty-year anniversaries were observed by Charles Shelly, Richard Paramore, Charles Chidester, Louis Balsam, William Van Orstrand, Glen Dory, Adam Krauszer, Leo Grizel, Douglas Weeks and Charles Hanlon.

Passing 15-year service milestones were George Radoumis, Donald Schoenmehl, Robert Lanham, Elton Koenig, Clarence Fleming, Kathryn Glines, Carl Watson, Jack Morgan, Frank McIntyre, Doyle Roberts, Edgar Balch, Eloise Howell, Ruth Fernandez, John Crowley, Jackie Tripp, Anthony Picciello, Refugio Ramirez, Carl Myers, Ercil Smith, Haruo Ichikawa, Boyd Bacon, Rosella Jordan.

Stanley Hawkins, Lee Mueller, Michael Smigielski, Arleen Lahn, William Sims, William McNabb, George Elliott, Estelle Berry, Jeannette Van Delden, Paul Faranda, Wallace Ashby, Jacob Blonk, George Alden,

(See AWARDS, page 6)

## Palos Verdes To Grow in Realignment

Approximately 300 additional Northrop employees will be assigned to the Nortronics Palos Verdes facility as a result of the realignment which combined Northrop Space Laboratories with Nortronics, according to Frederick Stevens, Corporate vice president and Nortronics general manager.

The move will be effective February 1, and employment at the Palos Verdes facility will be increased to about 650 persons, Mr. Stevens said.

Dr. V. W. Howard, division vice president and former NSL manager, will head the new Nortronics department, called the Northrop Systems Laboratories. Dr. Howard has already moved his offices to Palos Verdes.

Manager of the new Northrop Support Operations department, L. H. Brennwald, also will be headquartered at Palos Verdes. Mr. Brennwald's group is assigned with the management of former NSL field offices at Cape Kennedy, Edwards Air Force Base and six other locations.

Floyd W. Priest has been assigned to assist Dr. Howard in the initial planning required for the integration of the NSL personnel and laboratories. Mr. Priest is being assisted by Stan Blank of the Nortronics Technical department facilities, and Clark DeSpain of the Norair facilities.

"Our planning is beginning to move along nicely," Mr. Priest said, "and we hope to have all the necessary work completed shortly so that the personnel move can be accomplished as efficiently as possible."

Mr. Stevens has appointed Don Lewis, Nortronics treasurer, the administrative responsibility for directing and carrying out the necessary steps to complete the NSL-Nortronics move by February 1.

Many of NSL's scientists and engineers will remain in Hawthorne, where the necessary facilities and equipment are already installed, Mr. Stevens said.

In general terms, one of the most significant objectives of the new Northrop Systems Laboratories will be to develop new systems to enable man to operate in new and unfamiliar environments, such as outer space and beneath the ocean.

## Gem, Mineral Club Invites Visitors to First Field Trip

Members of the Nortronics Gem and Mineral Club at Anaheim are extending a special welcome to new or would-be "rock-hounds" to join them on their first field trip of the year, January 28-29.

Carol Brittenham, NRC commissioner, indicated the trip will be to Tick Canyon, just 20 miles northeast of San Fernando on the Old Highway 6.



CONGENIAL CLASSROOM scene above was at Nortronics Anaheim during a 72-hour subcontract pricing course taught by Howard Lewis of Harbridge House, Inc. Twenty-eight Anaheim employees in procurement and materiel functions took part, received certificates of completion at conclusion of class.



## Vice President Commends Northrop on Gemini Work

Employees of Northrop Corporation, who played a part in the safe landings of America's Gemini astronauts, have been commended for their work by Vice President Hubert H. Humphrey.

"I congratulate you and your associates for your contribution to Gemini," Mr. Humphrey wrote in a letter to Thomas V. Jones, Northrop president and chairman. "The American people are proud of your role and participation."

Northrop Ventura provided the parachute landing systems which recovered all 12 spacecraft flown in the two-year program.

Ventura now is producing the multiple-parachute earth landing system for the three-man Apollo spacecraft with manned orbital flights scheduled to begin this spring.

"The Gemini program," the Vice President wrote, "has been a most impressive success from the first flight on April 8, 1964 through the twelfth which made

November 15, 1966, such a memorable and historic day.

"This program has proven through experience so many things about astronauts' courage and spacemanship, the reliability of our launch vehicles and spacecraft, and the efficiency and dedication of our support personnel.

"Above all," Mr. Humphrey said, "this Gemini program has revealed how a team representing the federal government and private industry can work together and, in so doing, show the world in an open fashion the vitality and efficiency of our democracy and free enterprise system."

In his reply, Mr. Jones said: "Northrop is proud of its membership on the government-industry team responsible for Gemini's success and your letter commending our efforts is greatly appreciated by all of our people. I want to pledge to you on behalf of Northrop and its employees our continuing support in every area in which we can make a contribution."

## F-5 Pilots Bring Happiness To Ailing 11-Year-Old Boy

Eleven-year-old Danny Amaya left a hospital bed recently for what may have been the greatest day of his life.

Danny was the guest of the 4441st Combat Crew Training Squadron at Williams Air Force Base, Arizona.

Like most youngsters at one time or another, he has the ambition to become a jet pilot. His hopes and dreams were partially fulfilled by understanding combat veteran F-5 pilots.

He was met by Lt. Colonel Alfred H. Hopkins, commander.

After a look at the Operations Room, Danny, escorted by Colonel Hopkins, visited the flight line with rows and rows of aircraft.

Climbing into an F-5 cockpit, Danny grabbed the control stick, mentally zooming down the runway slipping the earthly bonds. With his fantastic mission complete and return to reality, Danny was ready to meet other challenges.

He was presented a gigantic

Christmas card depicting an F-5 aircraft. This card contained a certificate making Danny an honorary jet pilot and member of the 4441st.

One pleasant shock followed another.

He received an F-5 aircraft model, courtesy of Hank Waklee, Northrop management representative, and an autographed framed photo of the world famous aerial demonstration team—the U.S. Air Force Thunderbirds.

Beyond Danny's wildest dreams, he is now a jet pilot.

But what is a jet pilot without a checkout flight? At this point, Lt. Colonel Duane L. Carpenter, with the help of Helton Aviation, gave Danny his 25-minute check flight in a Lark 95.

It was but one short day in Danny's life. But memories are to be cherished forever.

Danny is undergoing treatment at the Phoenix Crippled Children's Hospital for an inoperable malignancy.



A LIFETIME DREAM comes true for 11-year-old Danny Amaya, as Lieutenant Colonel Alfred H. Hopkins gives him a flight helmet and a model of the F-5. The boy was the recent guest of the 4441st Combat Crew Training Squadron at Williams Air Force Base, Arizona.

## AD ASTRA PER ASPERA

## Answer to Temperature Problems Receives International Response

When Wiktor Jaworski of Northrop Systems Laboratories submitted a technical paper to Princeton University's "Astronautica Acta" two years ago, he had no way to anticipate the response.

The Paper, "Surface Temperature of a Semi-Infinite Solid Exposed to One-Dimensional Variable Heat Flux," was printed in March 1965.

Since then, requests for reprints have arrived from throughout the world. The National Aeronautics and Space Administration's Lewis Research Center in Cleveland was one of the first agencies to request a copy.

Massachusetts Institute of Technology was another, as was Purdue University's School of Mechanical Engineering.

Other requests came from as far away as the University of Adelaide, in Australia; Pilsen, Czechoslovakia; and Altenburg, East Germany. (Requests from Iron Curtain nations are being handled in accordance with U.S. Government policy.)

Why the apparent universal acceptance of the paper?

"It offered an answer to a problem through a new approach," Mr. Jaworski said.

The paper has a specific application in determining surface temperature of certain solids exposed to heating, including those used in heat shields for space vehicles.

Mr. Jaworski, a member of the NSL Senior Technical Staff, has worked at Northrop since 1957. His current assignment is at Jet Propulsion Laboratories in Pasadena, where he is contract supervisor on the lunar surface thermosimulation portions of the Surveyor Project.

One of his earliest assignments at Northrop was as supervisor of design integration on the F-5.

He received his master's degree from the University of Warsaw in 1937, and a diploma for additional work.

Three technical texts, prepared by seven



Mr. Jaworski

Northrop Norair men, will be presented in New York next week at the fifth annual American Institute of Aeronautics and Astronautics Aerospace Sciences Meeting.

"Design and Instrumentation of a Large-Scale VTOL Test Bed for Investigation of Ground Proximity Effects" was written by W. W. Watson of Research Design, R. Lavi of Internal Aerodynamics and Propulsion Research, and H. Asdurian of Propulsion.

"The Pressure Distribution on a Rectangular Wing With a Jet Exhausting Normally Into an Airstream" was written by P. T. Wooler, J. T. Gallagher and G. Burghart, of Aerodynamics and Propulsion Research and Technology.

"The Streamline Matching Techniques for V/STOL Wind Tunnel Wall Corrections" was written by W. A. Martin of Aerodynamics Research.

The meeting will be held January 23 through 26.

Last week, A. L. Scow of Metallics Research presented his text, "Extruding and Drawing Steel of Contract No. AF33 (615) 3159," before the Air Force Materials Laboratory Metal Working Technology Symposium. The meeting was held January 10 through 12 in Las Vegas.

Six Northrop Norair men will be in Cocoa Beach, Florida, next month, to participate in a seminar on airborne photo-optical instrumentation.

The February 20 and 21 meeting is sponsored by the American Society of Photogrammetry and Society of Photo-Optical Instrumentation Engineers. The U.S. Air Force Eastern Test Range will be co-sponsor.

Frank F. Crandell, Paul T. Glamkowski and Charles A. Luke will appear at a session on environmental constraints, discussing "A Computerized Method of Optimizing Design of Airborne Electro-Optical Image Recording Systems, Using Modulation Transfer Function Analysis."

Jack Gantz will be chairman of a session on equipment design.

James F. Lynch and Fred Clark will appear at a session on applications, discussing airborne optical satellite tracking.

## Building Begins On Headquarters For Hallicrafters

The Hallicrafters Company, a wholly-owned subsidiary of Northrop Corporation, broke ground last week for a new 210,000 square-foot administration and engineering complex in Rolling Meadows, near O'Hare International Airport, 25 miles northwest of Chicago.

Hallicrafters, which specializes in radio communications and military electronics equipment, announced that the new facility will serve as executive offices, engineering, sales and general offices of the company. The building will cost more than \$3.5 million. It had been planned for several years.

The move will consolidate several Hallicrafters facilities, with a net increase in space of more than 100,000 square feet. Two other manufacturing plants, one at Cicero, Illinois, and another in Chicago, will continue operations.

Approximately 500 persons will be employed at Rolling Meadows by August 1. Completion of the facility by November will substantially increase the number of employees.

Acquisition of Hallicrafters by Northrop was completed December 20, following approval by shareholders of both companies December 13.

Representing Northrop at the groundbreaking ceremony was President Thomas V. Jones.

## MASONIC GROUP TO HOLD INSTALLATION

Members of the Flying Wing Acacia Club, a Masonic group, will meet Saturday for their annual installation of officers.

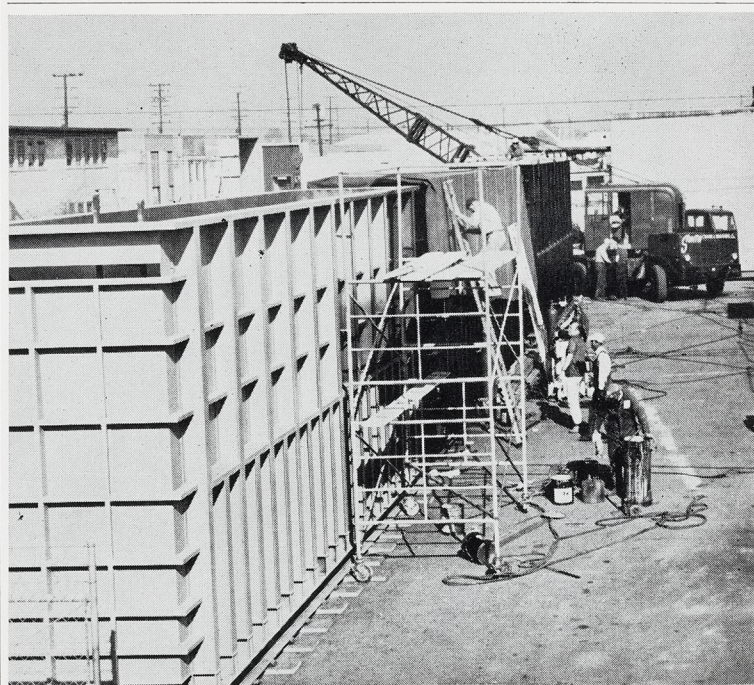
The group, which is composed of Northrop employees and former employees, will meet at 7 p.m. in the Du Par's Restaurant Banquet Room, 2942 W. Imperial Highway, Inglewood.

Lee Johnson will be installed

as president. Les Hickman will be vice president.

Other officers include Dick Brown, secretary; Lloyd Raborn, treasurer; and Otis Teague, sergeant-at-arms. Jerry Steiner will be installing officer.

Further information may be obtained by contacting Mr. Brown at 923-9957, or Don Riley at 397-6638.



INITIAL TANK COMPLETED—Northrop Architectural Systems has completed and delivered the first of a series of 21 tanks being built for the Northrop Norair Plant One processing line for the Boeing 747 operations. The photograph shows the magnitude of these tanks which, according to J. M. Druliner, NAS project manager, measures 32 feet in length, 12 feet in height, 5 feet in width, and weigh between 25,000 and 45,000 pounds each, depending upon whether or not they are lead lined.



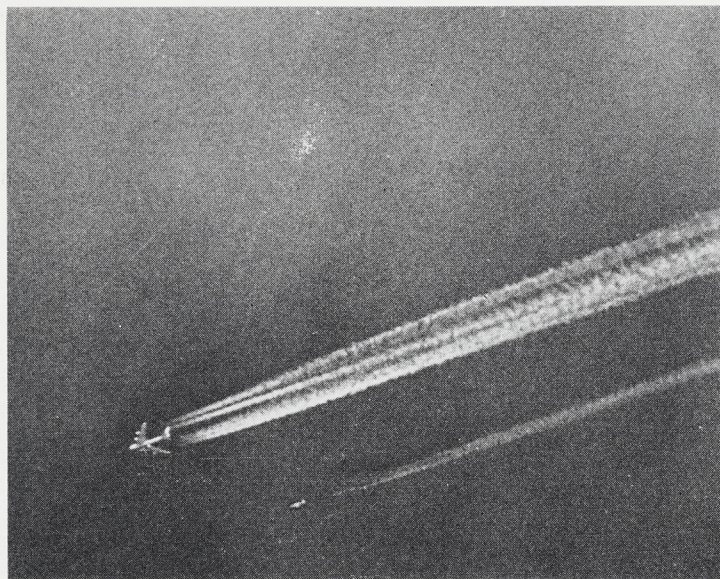


SECONDS BEFORE TOUCHDOWN, NASA pilot Bruce Peterson brings the HL-10 lifting body in for its first manned landing. From

45,000 feet, the HL-10 glided to earth in four minutes at a landing speed of 220 miles per hour.



PILOT PETERSON checks and double-checks the controls of the new lifting body prior to takeoff, from Edwards Air Force Base.



A 30-MINUTE CLIMB takes the B-52, still holding the HL-10 under the right wing, to 45,000 feet. Here, just before the HL-10 was cut loose, the B-52 and its chase plane leave jet streams across the sky. The picture below shows the B-52 and HL-10 at takeoff.



## FROM NORAIR TO NASA

# First Flight a Success For HL-10 Lifting Body

The National Aeronautics and Space Administration's HL-10 lifting body has joined the M2-F2 in the skies over Edwards Air Force Base.

Both vehicles were built for NASA by Northrop Norair.

The HL-10, piloted by Bruce A. Peterson of NASA's Flight Research Center, was flown on December 22. The M2-F2 has made a total of 14 flights—all highly successful—since it was delivered to NASA in 1965 and made its first flight last July.

The lifting body concept is being investigated in flight by NASA to help establish the technological base for design of future manned spacecraft that are capable of maneuvering in flight to a pilot-controlled ground landing. Wingless, the lifting bodies obtain their aerodynamic lift for flight from the shape of their body. Because of their higher maneuvering capa-

bilities, lifting bodies may offer greater advantages than present manned spacecraft.

According to Dr. Leonard Fowell, director of Hypervelocity Systems for Northrop, vehicles such as the M2-F2 and HL-10 offer the capability of great flexibility in the choice of the time and location of the point at which entry is initiated to achieve a horizontal landing at a specified base on the earth's surface.

"Another advantage of the lifting body concept is that it enables the pilot to control the deceleration forces and heating that would be experienced during atmospheric entry. In missions such as rescue, it could be very important to prevent the injured astronaut from experiencing the high "g" forces that he would be subjected to in a ballistic capsule," Dr. Fowell says.

For logistics missions between the earth and manned satellites, Dr. Fowell pointed out that a vehicle of the M2-F2 shape could carry six men with no increase in its present size.

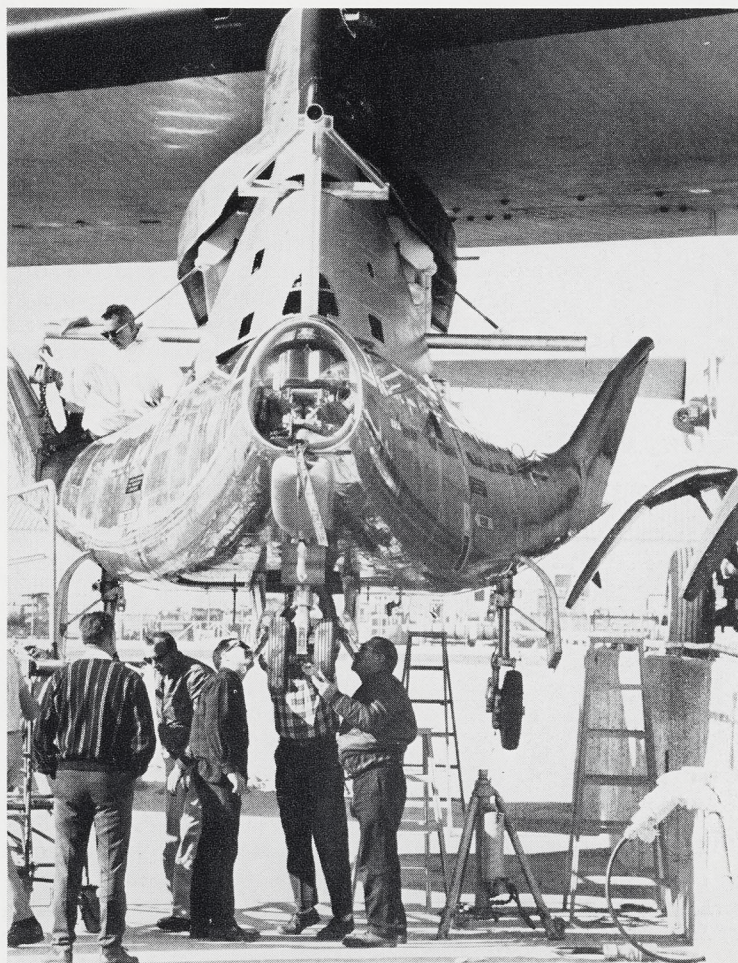
In the December 22 flight, the 6,000-pound HL-10 was air-launched from beneath the wing of a B-52 flying at 45,000 feet and 450 miles an hour.

Pilot Peterson launched himself in a straight ahead glide, and then made a 90-degree left turn. This was followed by a straight run, during which he made a practice landing flare-out at approximately 25,000 feet.

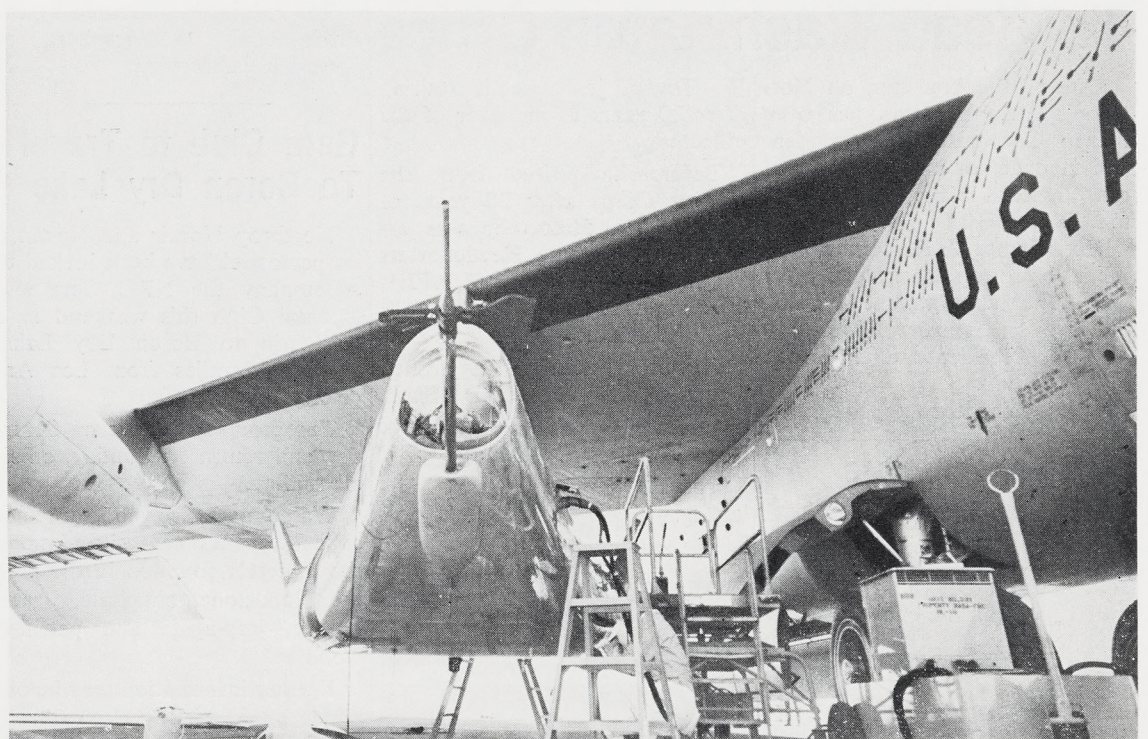
He then made another 90-degree left turn to the final landing approach. As he descended through 1,200-foot altitude, he began the flare out maneuver designed to slow his rate of descent and cushion the landing. During this maneuver, he decreased his horizontal speed from 330 miles per hour to about 220. This maneuver decreased his vertical descent from 250 feet per second to approximately five feet per second.

The M2, which has completed 14 free flights, with four different pilots, is presently being readied for installation of its rocket engine.

Photos by Bob Thornton, Bill Cox and NASA



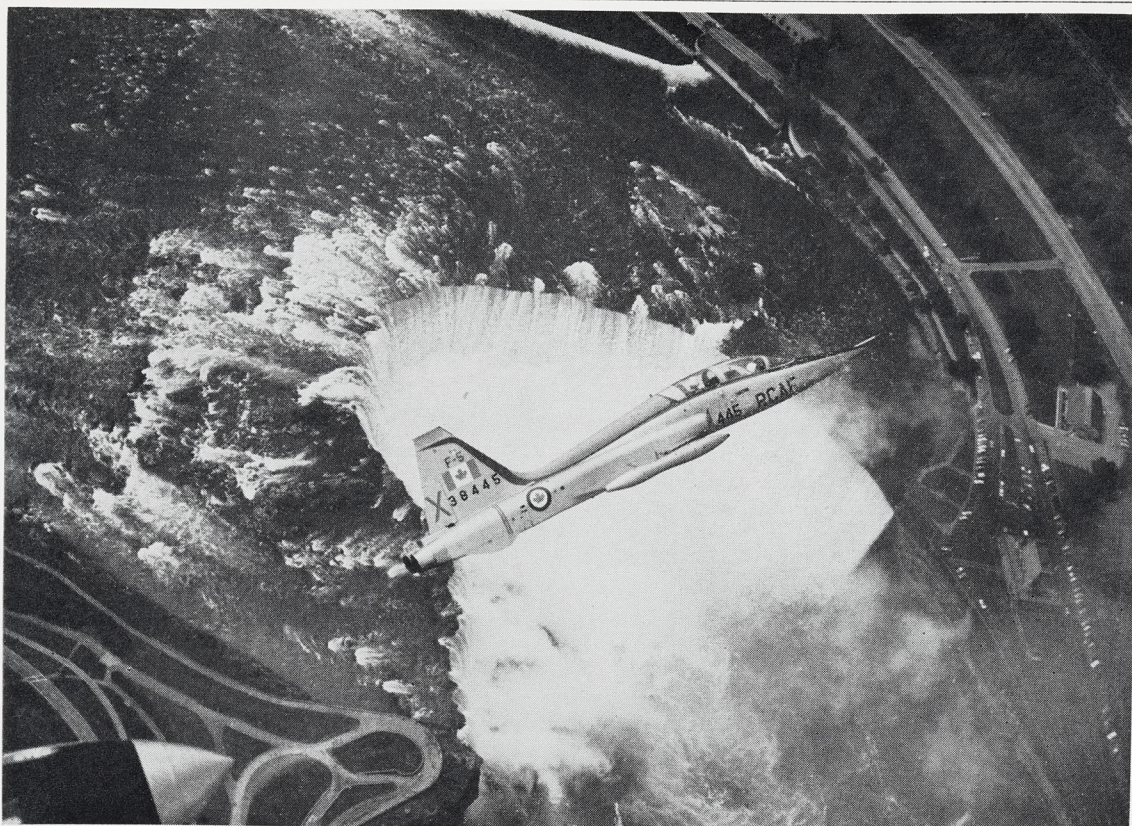
UNDER THE WING of the huge B-52 bomber, technicians check the landing gear of the HL-10. Ralph Allen (left) is Northrop's full-time representative to NASA's Operations department.



SECURELY FASTENED to the B-52, the HL-10 undergoes fueling operations in its hydrogen peroxide stabilization jets. Although the

HL-10 is 22 feet long, 15 feet wide and 11 feet high, it is dwarfed by the B-52. The M2-F2 is carried in the same manner.





NIAGARA FALLS, as seen from several thousand feet, provides the backdrop for an F-5B in flight, as photographed by Ron McGaffin. The original photograph, in color, was used as the

cover for Aviation Week Magazine. Mr. McGaffin was in another Royal Canadian Air Force aircraft when he took the picture.



READY FOR FLIGHT in a T-38 is Norair photographer Ron McGaffin, who has five pictures of the Northrop-built aircraft on display at the California Museum of Science and Industry. He has worked at Northrop since 1951.

## James V. Holcombe Named To Head Washington Office

One of the key men on Northrop's European staff has been named Corporate vice president and manager of Northrop's Eastern Regional office in Washington, D.C.

He is James V. Holcombe, who joined Northrop nearly four years ago. The appointment became effective on January 2, Thomas V. Jones, president and chairman, said.

Mr. Holcombe replaces S.

### Golfers Schedule First Tournament

Northrop par chasers in the Hawthorne area will hold their initial golf tournament of the new year January 28 at the Pala Mesa Country Club north of Escondido.

Tee times for 80 players begin at 8:30 a.m. Entry forms are now available at Personnel Activities. They will be accepted January 23 through January 26.

W. Towle, jr., who is retiring after 20 years as manager of the office.

Before he retired from the Marine Corps after 20 years of service, Mr. Holcombe was assigned to Supreme Headquarters Allied Powers Europe (SHAPE), where he was involved in NATO's European nuclear strike force.

He holds the Distinguished Flying Cross and the Air Medal.

In his new position, Mr. Holcombe reports to Glenn R. Lord, Corporate vice president of Marketing.

In announcing the appointment, Mr. Jones said:

"Mr. Holcombe brings to Washington the background and experience which, coupled with the organizational changes previously announced, will enhance Northrop's understanding of and working relationships with its customers."

## Photo Exhibit Will Feature McGaffin

Northrop Norair's F-5 jet fighter will be well represented at Photography West, an exhibition at the California Museum of Science and Industry, scheduled from January 20 through February 26.

Five color prints of the F-5, all taken by Norair photographer Ron McGaffin, will be on display in the museum, in Los Angeles' Exposition Park.

Two of the photographs — a scene showing a Skoshi Tiger flight mid-air refueling, and another showing an F-5B over Niagara Falls — have appeared as cover photos on Aviation Week Magazine.

The others show four F-5's, flying in formation; an F-5 in flight over Arizona's Superstition Mountains; and a ground shot in Belgium.

Mr. McGaffin has worked at Norair since 1951. He saw service in the U.S. Army Signal Corps, World War II and the Korean conflict as photo editor and combat photographer.

The exhibit is sponsored by the Professional Photographers of Southern California.

### Gem Club to Travel To Boron Dry Lake

Northrop Norair and Nortronics personnel have been invited to accompany the NRC Gem and Mineral Club this weekend in a field trip to Boron Dry Lake, about 125 miles from Los Angeles.

The group will leave on Saturday and return on Sunday, officials said.

Water and firewood are not available at the campsite. Among the minerals common in the area are bloodstone, chapinite, agate, opalite, jasp-agate and petrified wood.

Further information may be obtained by contacting Herb Elwell, Norair ext. 2615; or Art Cohee, Nortronics Palos Verdes ext. 675.

The campsite is near Mojave.

## NORAIR MAN HELPS

### Books for Foreign Nations

Help to foreign nations doesn't just come in dollars or bushels of wheat, a Northrop Norair man believes, and he is active in a group which sends books to students, doctors and other persons in many countries.

C. W. McQueen of Norair Cost Estimating believes that increased knowledge, as obtained through reading, "can help a man achieve that which he otherwise could not; knowledge can help a man improve his life."

The non-profit private agency is the International Book Project. It sends English-language books and journals to schools, libraries and individuals throughout the world. Its headquarters are in Lexington, Kentucky.

Mr. McQueen's cousin, Dr. Farra Van Meter, is founder of the program, and he and his wife direct its activities.

Upon request, they send a prospective donor the name and address of a recipient, and the donor sends the books, himself.

"Almost everybody has some books that he's read and no longer needs or wants," Mr. McQueen said.

"These are the people that the International Book Project is trying to reach.

"Books about almost any subject are scarce in many countries, so nearly everything is useful. Literature, classics, poetry, picture books, technical journals, children's books, information about America, textbooks, science books, historical works; all are welcome."

Most of the books donated go to individuals in non-English-speaking countries who speak and read English and want to teach it

to their children.

Past recipients have included doctors, social workers, economists, businessmen, teachers, engineers, scientists and musicians.

Prospective donors may obtain an address to send books to by writing the International Book Project, including information on what types of books they have available. This gives the project's advisers the opportunity to match the books to an individual or group who needs volumes of that subject.

Mr. McQueen said additional information may be obtained by writing the International Book Project at 17 Mentelle Park, Lexington, Kentucky. Self-addressed stamped envelopes should be enclosed.

## Meteorologist Joins PPD

Dr. Paul A. Silberg, one of the nation's leading researchers in tornado studies, plasma physics and meteorology, has joined the Northrop Nortronics Precision Products Department in Norwood, Massachusetts.

Dr. Silberg, who joined PPD as a consulting scientist in Research and Development, has written more than 30 technical papers and has made several presentations at national and international physics and meteorological conferences.

He has done research work for General Electric, Bell Aircraft, Melpar and Raytheon. He also was a staff member of the Air Force Scientific Analysis Office. He taught at the University of Michigan.

Dr. Silberg received his bachelor's, master's and doctorate degrees in physics from Syracuse University.



Dr. Silberg

### Exclusive Showing Planned for 'Bible'

Tickets for an all-Northrop theater party to view the film "The Bible" are now available through Personnel Activities ticket outlets at all facilities.

This exclusive showing will be at 9:30 a.m., February 4 at the Beverly Theatre, 206 North Beverly Drive, Beverly Hills.

Through the combined sponsorship of Northrop Recreation Clubs, tickets sell for only \$1.

### Friday Is Final Day For JA Applicants

Teenage sons and daughters of Northrop employees in the Los Angeles area have until Friday, January 20, to join in Junior Achievement activities for the current year.

After Friday no additional applicants can be accepted, Junior Achievement officials indicate.

Northrop Corporation supports this important youth program through efforts of its Ventura, Norair and Nortronics Divisions. Many Northrop men volunteer their time as advisers.

Information on the program is available through Junior Achievement Business Centers in various areas in and around Los Angeles.

### Company Seeks 'Missing' Persons

Anybody know where Donald F. Benson is? Or Paul Serafin?

They are two of 16 former Northrop Corporation employees whom company officials have been trying unsuccessfully to contact in order to notify them that they may be eligible for retirement or savings benefits.

Mail addressed to them has been returned, and the company can not contact them.

Anyone who knows their whereabouts has been asked to call Corporate officials at ext. 302.

The "missing" former employees—in addition to Mr. Benson and Mr. Serafin—are:

Arthur E. Lemire, Darrel E. Crow, John Rawcliffe-King, Leslie B. Sullivan, C. L. Yarbrough, Cecil A. Ferguson, Willie M. Klassen, K. A. Crist, V. E. Cull, Robert C. Peterman, R. B. Hughes, Dean J. Snyder, Bert Van Koeving and W. G. Eastwood, jr.

### Club Schedules GM Assembly Line Tour

The Northrop Norair Management Club has scheduled a tour of the General Motors assembly plant in South Gate for 7 p.m. tomorrow (Thursday).

The tour is open to club members, their families and guests (excluding children under 12).

Members may make reservations by sending \$1 to Ralph Branning, Org. 3442, Zone 32, or by contacting him at ext. 2001.

The plant is at 2700 Tweedy Boulevard, South Gate.



Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private businesses are not accepted. The Northrop News reserves the right to edit or omit ads.

# Classified

Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 64. Ads are limited to one item. Deadline is noon Wednesday, one week before publication.

**For Sale**  
**Corvette**, 1962, 340 h.p., 4-spd., positraction, Michelin tires, r/h, 1-owner, \$2,100. Lakewood, 634-8632. A  
**Ford**, 1959, 4-dr. station wagon, 8-cyl., auto. trans., r/h, less than 15,000 miles since eng. & trans. rebuilt, \$350. P.V. Pen., 377-7733.  
**House**, 3-bdrm. & den, Haysland Ests., Huntsville, Ala., 2 baths, paneled den, bltin oven & stove, dishwasher, cpts., dps., central gas heat, elec. air cond., over 1,800 sq. ft., 2-car gar., \$190 mo. lease or \$24,000. Orange, 714-532-1510. A  
**Home**, ranch-style, 4-bdrm., 2 baths, living & formal dining rms., breakfast rm., 2 fireplaces, 15' x 26' glassed family rm., 36' heated swim pool, complete cpts. & dps., dble. gar., landscaped incl. sprinklers, in Rolling Hills Riviera, near fwy. & Ft. MacArthur, \$43,000. San Pedro, 831-5283. A  
**Mountain Home**, in Running Springs, 1,000 sq. ft., 2-bdrm., sun porch, modern kitchen, lge. living rm., good for vacation or permanent residence, \$14,500. Wilmington, 834-4184. A  
**Chevrolet**, 1957 2-dr. h/top, new tires, battery & brakes, needs some work, \$175. Inglewood, OR 3-3319. A  
**Oldsmobile 98**, 1950, 4-dr. sed., V-8, auto., r/h, w/w, orig. owner, \$250. L.A., 384-4017.  
**Corvaire**, 1965 Monza, 4-spd., orig. owner, \$250 dn., bal. \$1290, \$1,450. L.A., OR 0-2098.  
**Falcon**, 1962, r/h, good tires & paint, s/belts, \$625. L.A., 746-9401. A  
**Buick**, 1955 Special, 2-dr., auto. trans., heater, \$100. Lawndale, 371-3919. A  
**House**, 3-bdrm., 1½ bath, 1,700 sq. ft., 4½ yrs. old, \$34,000. P.V. Pen., 377-5439. A  
**Go-Kart**, MC 9, bug racing-type, w/clutch, \$135. Hesperia, 334-0211. A  
**Dodge**, 1950, 4-dr. sedan, factory rebuilt eng. w/38,000 miles, customized, undercoated, \$195. Pasadena, 355-6549. A  
**Precision Tools**, over \$700 worth of Starrett & Brown & Sharp w/26" Gerstner chest, \$350. L.A., AN 9-0093. A  
**Cabin Cruiser**, 23' Owens, 65 h.p. inboard Hercules eng., covers, trailer, \$1,750. Pac. Palisades, GL 4-9797. A  
**MG** midget roadster, 1962, \$50 & take over \$39 mo. pymts., \$300 bal. Sepulveda, 892-8066. A  
**Pontiac**, 1963 Grand Prix, r/h, factory air, low mileage, \$1,695. Huntington Bch., 714-847-0648. A  
**Boat**, 16' Nevee, sleeps 2, 50 h.p. Starflite Evinrude, dble. ski hitch, bltin gas tank, fiberglass hull, trailer, extras, \$950. Manhattan Bch., 545-6303. A  
**T-Bird**, 1961, full power, air cond., take over \$62.57 mo. pymts. for 20 mos. & \$200. Torrance, 835-5708. A  
**Trailer**, 16' Shasta, sleeps 4 adults & 2 children, elec. brakes, 50 lb. butane tank, new tires, gas & elec. lights, \$595. Fullerton, 871-4623. A  
**Accordion**, Universal, 120-bass, Mother-of-Pearl, full keyboard, 5 switches w/velvet lined case, cost \$475; \$125. Torrance, 371-9651. A  
**Home**, contemporary-style, 3-bdrm., 2-bath, w/family rm. den & playroom, bltins, fenced, extensive shrubbery, sprinklers, dps., 2½ yrs. old, view of Conejo Valley, consider trade or lease, \$34,500. Thousand Oaks, 805-495-9601. A  
**Motorcycle**, Bultaco Mercurio, 175cc, \$375. Inglewood, PL 6-7681. A  
**Bicycle**, 28" Schwinn, 10-spd., racer, lock, rack & pouch, 2 mos. new, cost \$90; \$50. Hawthorne, 675-5681. A  
**Travel Trunk**, almost new, \$10. P.V., FR 7-6435. A  
**House**, 2-bdrm., 1-bath, lge. family rm., fireplace, lot 55' x 185', dble. car detached gar., \$26,000. Lomita, DA 5-0236. A  
**TV**, 21" Packard Bell, console, 5 speakers, remote control, new picture tube, \$95. Torrance, FR 1-1096. A  
**Windshield Wiper Arms**, blades & adapter to change VW to American size, \$5. Lomita, 326-0940. A  
**Executive Home**, Rolling Hills-PV view, 4-bdrm., 3 baths, family rm. w/wet bar, cpts., 3,000 sq. ft., .7 acre, \$69,900. Los Alamitos, GE 0-1285. A  
**Ski Boat**, 1966 Stevens SK, 1100SS Merc. outboard, 2 gas tanks, cavitation plates, custom trailer, \$2,450. Hawthorne, 679-7325. A  
**Pups**, California variety, 6 wks. old on Dec. 24, \$50 ea.; 8 for \$1. P.V. Pen., 377-6065. A  
**Sewing Machine**, portable, zig zag w/all attachments, \$40. Torrance, DA 9-9464, DA 7-8994. A  
**Kittens**, Siamese, 2 & 3 mos. old, males & females, sandbox trained, \$15 ea. Hawthorne, 676-1633. A  
**Volkswagen**, 1963, radio, new tires, \$950. Los Alamitos, GE 1-0265. A  
**Telescope**, 6" reflector, equatorial, setting circles, camera mount, clock drive, 60mm guide scope, \$220. Los Alamitos, 596-1257.  
**Pontiac**, 1965, Grand Prix, power & air conditioning, \$2,650. Studio City, 656-4394. A  
**Boat**, 14' Wizard, fiber glass, 1965 Evinrude, 60 h.p. eng., custom built, lge. wheel trailer w/new canvas cover, \$1,695. L.A., 479-8792. A  
**Wedding Dress**, traditional princess-style, Kayhill Gown, white silk taffeta w/train & applique around neckline w/3 petticoats attached, size 8, orig. cost \$135., \$50. Rolling Hills, 831-9707. A

**For Sale**  
**Tent**, 14' x 10' Sears, 6 mos. old, \$135. Norwalk, 865-6736. A  
**Chevrolet**, 1957 Bel Air h/top, 283 V-8, new ring & valve job, battery, smog device, \$300. Torrance, 370-0285. A  
**Ford**, 1959, Fairlane 500 Galaxy, 2-dr. h/top, r/h, auto. trans., all tires incl. spare, \$350. Gardena, 329-0433. A  
**House**, 4-bdrm. & family rm., 1¾ bath, bltin stove, nat. wood cabinets, disp., panelled & brick fireplace in living rm., cpts., lge. patio, forced air heat, intercom, dble. attach. gar., landscaped, fenced backyard, \$4500 dn., \$32,500. Torrance, 379-9114. A  
**Birds**, 1 pair zebra finch, pair of hooded nun finch, lge. cylindrical brass cage w/floor stand, \$15. Hermosa Bch., FR 6-7479. A  
**Volkswagen**, 1963, 113 sedan, radio, \$1,150. Inglewood, CR 7-7914. A  
**Crib**, w/mattress, 1½ yrs. old, walnut finish, orig. cost, \$70; \$30. N. Redondo, 376-5126. A  
**Volkswagen**, 1964 sedan, low mileage, w/w, \$1,105. Inglewood, 671-5576. A  
**Sunbeam** Alpine, 1962, new w/s/w tires, hard & soft top, \$1,050. Rolling Hills, 534-0747. A  
**Refrigerator**, 10 cu. ft., Admiral, coppertone, 2 yrs. old, \$75. P.V., FR 5-0867. A  
**Drum Set**, w/h, hat, sparkle orange, \$75. Redondo Bch., 371-8907. A  
**Wheel Chair** & walker, \$100. Hawthorne, 679-2330. A  
**Uniform**, Cub Scout, worn twice, complete w/pants, shirt, kerchief & cap, \$8. Hawthorne, 675-0795. A  
**Wedding Gown**, size 10, white silk faced peau de soie, detachable chapel train, cap of lace petals w/pearls & crystals, to ping a veil of silk illusion to the shoulders, \$75. Lynwood, 632-8596. A  
**Pickup**, 1963 Chevrolet Fleetside, 8' bed, hvy. duty springs & tires, r/h, 230 cu. in. 6-cyl., 3-spds., \$1,095. Redondo Bch., 371-9724. A  
**Accordion**, Excelsior & amplifier, 120 bass, white, numerous switches on both left & right, \$1,000. Inglewood, 674-4192. A  
**Aquarium**, 15-gal., w/hood, light & fish, u/ground filter & pump, heater, divider, \$25. Inglewood, 672-4486. A  
**Skis**, Head standards, Marker toe & lift cable, 215 cm long, \$50. Huntington Bch., HA 9-6277, 536-3217. A  
**MGB**, 1964, r/h, wire wheels, tonneau cover, \$1,700. L.A., 383-4953. A  
**Dining Room Table**, large, dark h/wood, \$15. Hawthorne, 676-3883. A  
**Skydiver's Parachute**, custom 1.6 red, white & blue, \$100. Simi, 805-526-1292. A  
**Carpet**, 9 x 12', beige-ivory tweed, 100% Nylon pile, used 5 mos., cost \$65; \$30. Torrance, 326-5731. A  
**Boat**, 14' Glasspar, 35 h.p. full elec. Mercury, trailer, many extras, \$595. Gardena, DA 9-4402. A  
**Tape Deck**, Bell w/all electronics for recording, playback of stereo, sound on sound, echo, walnut finish, \$200. Redondo Bch., 379-4559. A  
**Ping Pong Table Set**, \$10. Wilmington, 835-3869. A  
**Accordion**, full size, \$110. Torrance, 326-6195. A  
**Skis**, 6', \$15. Inglewood, 673-1133. A  
**Co-op Apt**, 2-bdrm., upstairs, view, porch, kitchen, bath, living rm., dining area, \$12,200 unfurn., \$13,700 furn. Inglewood, 678-6936. A  
**Corvaire Monza**, 1961, \$550. Huntington Bch., 714-962-3192. A  
**Sailboat**, Columbia Challenger, 24'4", aux. motor, boat bath, many extras, \$3,975. L.A., PL 5-4055. A  
**Chevrolet**, 1959 station wagon, Nomad, all extras, air conditioning, \$595. Malibu, 456-8559. A  
**Furniture**, dinette set & 4 chairs, single bed & mattress, day bed, bar & 2 stools, 2 chest of drwr., rocking chair, 2-pc. sectional, coffee & end tables, wrought iron chair, \$75 or sell separately. Gardena, 329-2556. A  
**Truck & Camper**, Chevrolet, 1963 ¾-ton, V-8 stick, 1964 8½ cabover Open Road camper, sleeps 6, fully equipped, \$1,995. Whittier, 699-8173. A  
**Sofa & Chair**, \$25. L.A., GR 4-7895. A  
**Barracuda**, 1966, r/h, V-8, auto. trans., floor mounted shift w/console, p/s, low mileage, \$2,500. L.A., 837-4596. A  
**Triumph**, 1963 TR4, 5 Michelin X tires, spoke wire wheels, disk brakes, like new top & tonneau, r/h, \$1,350. Torrance, 327-4356. A  
**T-Bird**, 1959, \$625. Hawthorne, OS 9-6215. A  
**Piano**, Everett console, matching bench, 2 yrs. old, walnut finish, \$500. Hawthorne, 644-1865. A  
**Chevrolet**, 1962 Impala 4-dr., r/h, p/s, p/b, 327, 4-barrel, \$1,300. Redondo Bch., 370-9795. A  
**Guitar**, Fender Jaguar & case, cost \$415; \$185; VOX Cambridge reverb. amplifier, cost \$240; \$155 or \$320 both. San Pedro, TE 2-4024, TE 2-7481. A  
**Camper**, Holiday, sleeps 2, stove, ice box, sink, 10 gal. water tank, \$425. Torrance, 834-9771. A  
**Falcon Futura**, 1962, auto., r/h, b/seats, recent engine o/haul, good tires, \$675. P.V. Ests., 377-2166. A  
**Mink Collars**, 2, \$10 ea. Rolling Hills, FR 8-1863. A

**For Sale**  
**Beach Lot**, steps to ocean, Oxnard Shores, all improvements in & paid, terms, \$7,200. Manhattan Bch., FR 4-3359. A  
**Piano**, leather upholstered, good tone, upright, \$75. Paramount, 634-0351, 644-2013. A  
**T-Bird**, 1964, full power, orig. owner, 29,000 miles, \$2,100. P.V. Ests., FR 5-9640. A  
**Amplifier-Speaker** combination, for home hi-fi or small band, powerful yet portable, \$39. So. Pasadena, 793-9476. A  
**Accordion**, Cantino, case & books, 120 bass, \$275. Gardena, DA 6-6922. A  
**Commemorative Poster**, antique, printed in 1901 of President McKinley assassination, set in hand-carved frame, \$25. L.A., 474-0814. A  
**Chevrolet**, 1964 Impala, S.S., r/h, p/s, p/b, factory air, \$1,650. Anaheim, 714-828-3718. A  
**Mercury**, 1962 Meteor, 2-dr., V-8, r/h, p/b, p/s, b/seats, orig. owner, 45,000 miles, \$650. Pac. Pal., GL 4-5985. A  
**Chevrolet**, 1956 2-dr. h/top, r/h, auto. trans., \$400. Torrance, 372-1641. A  
**Sewing Machine**, White, portable, w/attachments, about 3 yrs. old, cost \$160; \$75. Redondo Bch., 370-0250. A  
**Pup**, male, 4 mos. old, cocker-terrier, short hair, has had shots, excellent pet for children, \$25. Redondo Bch., 370-0990. A  
**Sound Stripper**, Argus Syntronic automatic for magnetic sound stripping 8mm movie film, used once, \$30. Box 101. A  
**MGB**, 1959, wire wheels, 5000 miles on eng., new top & paint, \$875. Box 102. A  
**Corvette**, 1965, 365 h.p., American mags, 8½" Goodyears, 4.56 posi., headers & glass packs, Hurst, towbar, \$3,900. Hawthorne, OS 5-1365. A  
**Stenotype Machine**, Secretarial, nearly new, w/instruction books & paper, \$95. Lomita, 326-9378. A  
**Oldsmobile 88**, 1961 Holiday coupe, r/h, p/s, p/b, premium w/w, 1-owner, \$995. Placentia, 528-8582. A  
**Couches**, 2 6' white Naugahyde, \$50. Torrance, 325-4869. A  
**Bedroom Set**, king size, bed, head board, 2 night stands, 2 dressers & mirror, \$150. Hawthorne, OS 6-6949. A  
**House**, 4-bdrm., family rm., 2-bath, utility rm., 1820 sq. ft., completely fenced, cpts., dps., bltin range, oven, fireplace, dishwasher, disp., ocean view, immediate possession, \$37,900. P.V. Pen., FR 5-9929. A  
**Corvaire**, 1962, 4-dr. Monza, auto. trans., 35,000 orig. miles, \$700. Redondo Bch., 370-7130. A  
**Chevrolet**, 1955 sta. wagon, 2-dr., V-8, auto. trans., \$250. Hawthorne, 638-3129. A  
**Volkswagen**, 1963, 32,000 miles, \$900. Gardena, 324-6871. A  
**Sewing Machine**, Westinghouse console, 4 yrs. old, \$40. Hollydale, ME 3-2395. A  
**Hydraulic Transmission**, for Chevrolet 6, 1955 to '65, inclds. bell housing, torque converter, starter & all linkage, \$95. La Mirada, 944-3794. A  
**Corvaire Monza**, 1965, 4-spd., 19,000 miles, \$1,375. La Habra, 526-7825. A  
**Bar & stools**, custom-made, Formica bar top, 4 white leather stools w/matching back rest, \$140. Redondo Bch., FR 6-6415. A  
**Range**, gas, 1957 model, white, \$25. Fullerton, 879-7625. A  
**Studebaker**, 1956, 6-cyl., stick, \$125. Orange, 532-3183. A  
**House**, 2-bdrm., ocean & city view, new cpts., dps., patio, \$23,000. Hermosa Bch., 372-8325. A  
**El Camino**, 1966, r/h, 3-spd., 6-cyl., \$1,500. Manhattan Bch., 545-1676. A  
**Bed**, dble, extra-long, w/maple headboard & foot board, Simmons box-spring & mattress, incl. linens, \$60. P.V., FR 7-4317. A  
**Mangle**, Iron-Rite, cost value \$250; \$80. L.A., AX 2-4958. A  
**House**, 4-bdrm., 1¾ baths, fireplace, forced air heat, bltins, dishwasher, bal. power medallion home, 3½ yrs. old, \$25,500. Torrance, 834-2175. A  
**Hi-Chair**, Cosco, blue plastic covered seat & back, chrome tray & legs, \$7. Rolling Hills, FR 5-9689. A  
**Pickup**, 1937 Ford, 389 Pontiac built to 421, Hydro, beefed frame, comp. Corvette rear end, tach, slicks, 1' chopped from bed, extras, \$800. Torrance, 329-2610. A  
**Poodle**, 18 mos. old, black male, has had rabies shot, \$30. Torrance, 326-0513. A  
**Houses**, 2 on lot, front 2-bdrm., rear 3-bdrm., 2-bath, near Northrop, low down, \$32,500. Hawthorne, 672-7207, SP 2-2638. A  
**Volvo**, 1963, 2-dr., 4-spd. trans., r/h, s/belts, w/w tires, \$1,295. Torrance, DA 5-5245. A  
**Pellet Gun**, Crossman, Model 38 CO2 revolver, \$18. Gardena, DA 7-9457. A  
**Stereo**, General Electric, 8 speakers, \$75. L.A., 939-3264. A  
**Plymouth**, 1950 sedan, \$100. Box 103. A  
**House**, 3-bdrm., 1¾ bath, covered patio, sprinklers, other extras, 2 blocks from El Camino, 10% dn., immed. occupancy, in Gardena, \$24,950. Huntington Bch., 714-842-2636. A  
**Chevrolet**, 1963, Impala, 4-dr., p/b, p/s, auto. trans., \$1,150. Lakewood, UN 5-1347. A  
**Buick**, 1963 Skylark, r/h, p/s, auto., low mileage, \$1,300. Garden Grove, 714-897-0453. A

**For Sale**  
**Piano-Accordion**, 120-bass, La Scalla, used only 6 mos., white & gold, velvet lined case, \$150. Lawndale, OS 5-5780. A  
**Tire Chains & Barecrafters** ski rack for Volkswagen, used once, \$10. Torrance, 371-3180. A  
**Ford**, wrecked 1961 Starliner, 5 new Firestone 500 Nylon tires on chrome rim knock-offs, 7.10 x 15, many parts, \$100. So. Gate, SP 3-4171. A  
**Skis**, Italian mfr., VAS 6', \$25. Newbury Pk., 213-652-1876. A  
**Home**, 4-bdrm., in Tucson, centrally located between University & Davis-Monthan AFB, acre lot, 2 lge. patios; 25 citrus trees, custom-built, consider lease, \$24,900. Hawthorne, 644-1459. A  
**House**, 3-bdrm., 2 baths, fireplace, sliding glass door, lge. lot, G.I. 4.5% loan or conventional, inclds. cpts. & dps., close to Norair & Nortronics, \$24,500. Gardena, FA 1-4314. A  
**Wig**, dk. ash blonde, human hair, worn once, cost \$100; \$38. Marina del Rey, 823-2655. A  
**Horse**, registered ½ Arabian gelding w/western saddle & bridle, \$500. FR 7-3487. A  
**Range**, O'Keefe & Merritt, gas, chrome top w/griddle, \$30. Buena Pk., 522-1835. A  
**Wanted to Buy**  
**Radio** for Volkswagen, 6-volt. Simi, 805-526-7767. B  
**Exercycle**. Lawndale, 676-3050. B  
**Honda S-90**, wrecked, reasonable price according to condition. Torrance, 835-8608. B  
**For Trade**  
**House**, 2-bdrm., clean, 900 sq. ft., 2 patios, landscaped, near Marina del Rey, \$17,500 equity trade for 4 or 5 bdrm., 2,000 sq. ft., wood floors, 3-4 car gar., lge. lot, will repair. Playa del Rey, 823-2242. C  
**House**, 2-bdrm., 3 blocks to Norair, consider trading \$10,000 equity for free & clear 12' wide mobile home. Hawthorne, 679-6982. C  
**Free (To Be Given Away)**  
**Pup**, 8 mos. old German shepherd, male, all shots, trained, loves children. Beverly Hills, CR 6-3534. D  
**Bird Dog**, half English & Irish setter, 1 yr. old. Lakewood, HA 9-7772. D  
**Rentals Offered**  
**Home**, 2-bdrm., 1½ bath, near beach & schools, \$130. Manhattan Bch., FR 4-8608. E  
**House**, 2-bdrm., pvt. gar., h/wood floors, garb. disp., pvt. yard, 2 children OK, close to schools, shopping, water & trash paid, \$120 mo. Lawndale, 679-8426. E  
**Apt**, deluxe 2-bdrm., furn., lge. pool & patio, closed garage, near El Camino, \$140. Torrance, DA 9-5986. E  
**Cabin**, Big Bear Lake, sleeps 7 to 9, \$18 w/end; \$50 wk. Bellflower, TO 2-0662. E  
**Apts**, deluxe 1-bdrm., furn. or unfurn., bltin elec. kitchen, swim. pool, carports, close to Northrop, \$110 & up. Torrance, 321-9225, 323-4945. E  
**House**, 3-bdrm., cpts., dps., fireplace, swimming pool, fenced yard, \$150 mo. Newbury Pk., 666-6404, 805-498-3505. E  
**Apt**, 2-bdrm., furn. & unfurn., cpts., dps., bltin stove, lower, walk to Nortronics Anaheim, \$110 & \$125. Fullerton, 526-3053. E  
**Studio Apt**, 2 & 3 bdrm., furn. & unfurn., bltins, cpts., dps., pool & rec. room, 5 min. from Northrop, \$145 & up. Inglewood, OR 4-5657. E  
**Apt**, 1 & 2 bdrm., bltins, cpts., dps., all elec., soundproofed, 20 min. to Norair, 5 min. to Nortronics, \$85 & \$130. Torrance, 375-2091, 375-5397. E  
**Apt**, 1-bdrm., den, 1½-bath, all elec. kitchen, dishwasher, fireplace, patio, on golf course, rec. priv., 2 clubhouses, 2 pools, near Del Amo Center, \$235 mo. Rolling Hills Ests., 373-3060. E  
**House**, 3-bdrm., newly decorated, garb. disp., enclosed backyard, 2-car gar., walking dist. to El Camino & Lincoln Elementary Schools, 1 yr. lease, \$160 mo. Torrance, 378-8181. E  
**Apt**, 2-bdrm., water & trash paid, fenced yard, unfurn., close to Northrop Haw., \$95 mo. Harbor City, 325-5705. E  
**Apt**, 2-bdrm., 1 yr. old, cpts., dps., bltins, \$120. Box 104. E  
**Room**, lge. bdrm. w/half bath in furn. new home, kitchen privileges, 1½ miles from Plant One, prefer swing shift employee, \$15 wk. Inglewood, 676-8833. E  
**Owner's Apt**, deluxe 3-bdrm., 2-bath, bltin oven, range, dishwasher, AF/FM-intercom, f.a. heat, cpts., dps., pvt. patio, closed gar., family rm., fireplace, near Norair, avail. Mar. 1, incl. utilities, \$225. Hawthorne, 679-1358. E  
**House**, 3-bdrm., 2-bath, fireplace, patio, cpts., dps., gardener, water paid, \$180 mo. Torrance, 371-1053. E  
**Bachelor Apt**, furn., upstairs, close to Northrop, 1 person only, inclds. gas & elec., avail. Feb. 1, \$65 mo. Hawthorne, OS 6-5921. E  
**Apt**, 1-bdrm., furn., heated pool, utilities incld., \$125 mo.; also 3-bdrm. owner's unit, \$250 mo., Hawthorne, 644-2418. E  
**Rentals Wanted**  
**Camper & truck** for 1 week late March, to sleep 4. Granada Hills, 213-363-5943. F  
**2-Bdrm.** in duplex or court, near Northrop, have cat, \$100 or less. Hawthorne, 644-3487. F

## Rides and Riders

**Rides Wanted**  
**7 a.m. — 3:45 p.m.**  
**Burbank Blvd., San Diego Fwy.**, Van Nuys John Kelly, Norair, ext. 2377-8, ST 0-5156.  
**Crenshaw & Imperial**, Inglewood. Josephine Verte, Norair, ext. 2075, 1324, OR 4-4138.  
**7:30 a.m. — 4:12 p.m.**  
**Highland & Marine**, Manhattan Beach. L. Berg, Norair, ext. 2763, 545-1662.  
**Crenshaw & 139th St.**, Hawthorne. D. L. Hall, Norair, ext. 1106, 675-3678.  
**Wilshire, Bundy to Hawthorne**, Los Angeles. Jack Wise, NSL, ext. 1444, 479-3343.  
**8 a.m. — 4:42 p.m.**  
**Vanowen, Platt or Fallbrook**, Canoga Park. Stanley J. Ehlinger, Nortronics Haw., ext. 462-3, DI 8-3289.  
**Victory Blvd. & Platt Ave.**, Woodland Hills. W. J. Palmer, Norair, ext. 1074, 347-5940.  
**Erbes Rd. & Thousand Oaks Blvd. or Ventura Blvd. & Topanga Canyon**, Thousand Oaks. Hugh M. Cameron, Norair, ext. 1518, 805-495-9984.

**Rides Offered**  
**7 a.m. — 3:45 p.m.**  
**Burbank Blvd., San Diego Fwy.**, Van Nuys. John Kelly, Norair, ext. 2377-8, ST 0-5156.  
**Avalon & 190th St.**, Gardena. Genaro Chapa, Norair, ext. 2568, DA 3-9447.  
**8 a.m. — 4:42 p.m.**  
**Vanowen, Platt or Fallbrook**, Canoga Park. Stanley J. Ehlinger, Nortronics Haw., ext. 462-3, DI 8-3289.  
**Victory Blvd. & Platt Ave.**, Woodland Hills. W. J. Palmer, Norair, ext. 1074, 347-5940.  
**Erbes Rd. & Thousand Oaks Blvd. or Ventura Blvd. & Topanga Canyon**, Thousand Oaks. Hugh M. Cameron, Norair, ext. 1518, 805-495-9984.

**Child Care Offered**  
**Babysitting**, in my home, close to Nortronics Anaheim. Box 105. G  
**Lost**  
**Pin**, lady's silver & rhinestone, shaped like turtle, on December 17 at Palladium in second Northrop children's Christmas show, has sentimental value. Torrance, DA 4-5867. J  
**Poodle**, small black female, around area of 118th Street & Prairie Ave. Hawthorne, 679-6148. J  
**Pencil**, stainless steel Parker. W.L.A., 836-3939. J

**Found**  
**Child's purse** at Palladium Norair Christmas party, 2 school pictures inside w/names: Pamela M. & Susan M., Medical, ext. 1131.  
**Personals**  
**Fly** 1967 172 Skyhawk at \$10 per hr. wet, 1966 150 commuters at \$8 per hr. wet, through flying club at the Torrance Airport, students welcome. Torrance, OS 6-6138, DA 5-5288. L  
I wish to thank all my friends in Construction & Maintenance depts. for the wonderful farewell retirement party & for all the gifts. ART SCHLANERT. L

**For Sale or Trade**  
**Acreeage**, 5-acre bldg. site near Rosamond, \$3,450 or trade \$1,500 equity for car, bal. \$1,950 at \$20 mo. inc. 6% interest. Torrance, FR 8-1026. M  
**Pistol**, .25 cal. Browning automatic, never fired, \$25 or trade on a 9mm Browning auto. or a .38 cal. S&W pistol. Torrance, 371-9925. M  
**Edsel Citation**, 1958, 4-dr. h/top, new auto. trans., p/s, p/b, hvy. duty suspension, dual exhaust, 410 C.I. newly tuned eng., rated at 354 h.p., \$225 or trade for modern guns of equal blue book value. Hawthorne, OS 9-7544.  
**Ranchero**, 1963, deluxe, 4-spd., FM/AM, 14" wheels, trlr. hitch, tonneau, \$950 or trade for pickup, V-8. Torrance, 378-4959. M

## F-5 Pilots Receive Unusual Yule Card

The USAF 10th Fighter Commando Squadron in Vietnam received a most unusual—and original—Christmas card last month from the Northrop Norair Product Support department.

Donna Boyd, an illustrator in Product Support, and Bob Luedeka and Bill Carter created the three-panel card. Each panel was 22 by 28 inches.

Numerous "Northrop Gnomes" were depicted constructing a huge Christmas stocking, and protruding from a hole in the toe were the paw and claws of a "Little Tiger."

The original code name of the F-5 aircraft assigned to the 10th Fighter Squadron was Skoshi Tiger, which means "Little Tiger."



## Nortronics Schedules Licensing

Northrop Nortronics has made arrangements with the Automobile Club of Southern California to provide in-plant automobile registrations for 1967 California licenses.

Club representatives will be at the following locations at the specified times: Anaheim, 11 a.m. to 12:30 p.m., January 18 and 25; Palos Verdes, 11:30 a.m. to 12:30 p.m., January 19 and 26; and Hawthorne, 11:30 a.m. to 12:30 p.m., January 20 and 27.

Services will be provided at Personnel Activities offices at Anaheim and Hawthorne and in the Personnel office at Palos Verdes. This service is open to all employees.

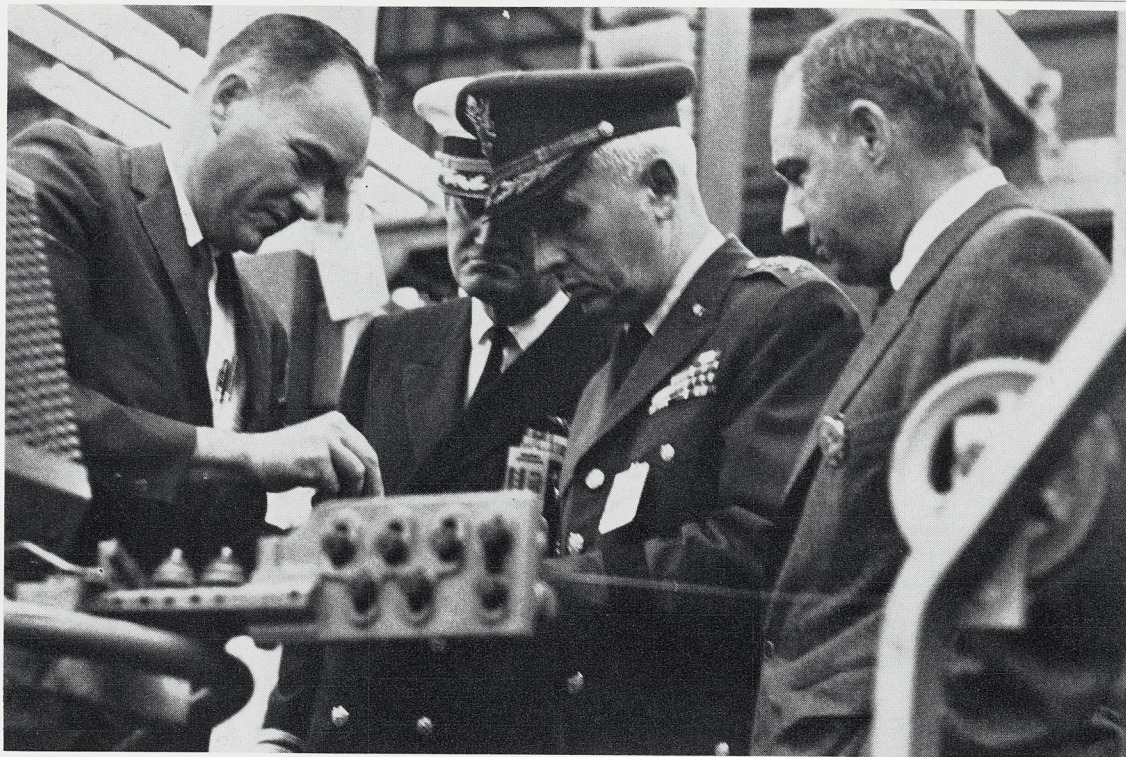
Employees must bring their 1967 registration cards along with cash or checks covering registration costs. Checks at Anaheim and Palos Verdes are to be made payable to the Automobile Club of Southern California. At Hawthorne they are to be made payable to Northrop Recreation Club.

Only employees with California registration cards can be accommodated. No transfer of titles or out-of-state registrations are possible through this special arrangement.

## Anaheim Fields Basketball Team

Action in the Anaheim Parks and Recreation Department Industrial Basketball league got under way this month with a Nortronics Anaheim NRC cage team holding down one of six spots in the league.

Play during the first round will be on Tuesdays.



**PRODUCTION LINE TOUR** at Nortronics Anaheim recently acquainted Major General John A. Goshorn, USA, (right center) deputy director of Contract Administration Services, Defense Supply Agency, with product lines. Commander Harry Thompson, DCASD chief at Anaheim, and Frederick Stevens (right), Nortronics general manager, look on as D. A. McInnis, director of Ordnance Manufacturing, explains a point. General Goshorn was making his first visit to Nortronics after assuming command of organization responsible for DCA activities across the nation.

tronics general manager, look on as D. A. McInnis, director of Ordnance Manufacturing, explains a point. General Goshorn was making his first visit to Nortronics after assuming command of organization responsible for DCA activities across the nation.

## BID TO BOEING

### Northrop Plans for SST

(Continued from page 1)

duce three wing box test assemblies, each 14-feet long, six feet wide and up to one and one-half feet in depth.

The first of these all-titanium assemblies and the cabin components were dispatched ahead of schedule before the end of 1966. The second was ready for shipment last week and the third is expected to be shipped later this year, both on or ahead of schedules set by Boeing.

Northrop Nortronics assisted in turning out these assemblies and components for the SST.

The wing box test assemblies

are actually sections of the SST's outer wing and thereby components in its most distinguishing feature.

The Boeing SST design features a variable-sweep wing which combines with a large horizontal tail to form a single lifting surface for supersonic flight.

Aerodynamically, the wing permits the Boeing SST to be three airplanes in one — a supersonic speedster, a subsonic airliner and a slow-speed aircraft that exceeds the takeoff and landing performance of today's big jet airliners.

For takeoff and landings the wing will be extended for added lift and quick climb. For subsonic flight the wing will be swept at an angle of 42 degrees. It will be swept at an angle of 72 degrees for supersonic flight.

A unique nose is double-hinged for lowering to provide good visibility on landing and takeoff, but can be raised into a streamlined position for supersonic flight and minimum drag.

The Boeing SST is designed to carry from 250 to 350 passengers at a normal cruise speed of Mach 2.7 (about 1,800 m.p.h.). With a load of 313 passengers it has a range of over 4,000 miles.

## DR. SULLIVAN

(Continued from page 1)

signed to the Navy Department's Nuclear Reactor Electrical Control branch between 1955 and 1957, Dr. Sullivan was responsible for the design, development and operation of the electrical, steam and reactor control systems for the first nuclear submarines.

This effort led to development of numerous unique nuclear systems for operations in the deep sea environment.

Previously, as a Naval line officer, Dr. Sullivan had gained extensive submarine experience aboard the USS Wahoo, which served in the Far East during the Korean War.

The Wahoo was the second of a new class of submarine, and was used as a test platform for many of the new systems which were included in later nuclear submarines.

Dr. Sullivan, his wife and 9-year-old daughter live in Sherman Oaks. He is a member of the American Medical Association, Aerospace Medical Association, American Institute of Aeronautics and Astronautics, and the Instrument Society of America.

The President's Commission was drawn from federal and state governments, industry, universities, laboratories and other scientific institutions.

## AWARDS

(Continued from page 1)

Harold Peck, Donald Caughlin, Elaine Steiner, Norma Terry.

Hazel Carter, James Rollins, Henry Arnold jr., Milburn Le-moine, Donald Attwater, Frank Ziegler, James Mikos, John Collins, Maurice Brown, Robert Umekubo, Duane Kock, William Baker, Matthew Majka, Fred Schwartz, Domenic Niccoli, Robert Cornelius, Donald Crawford, Frank Rangel, Ardis Adams, Raymond Beamon, Leo Miller, Stewart Killian.

James Linn, John Turner, Lucy Clark, Harold Kuhl, Jerome Riley, Phillip Reeder, Lawrence Williams, Durward Buckley.

Dorothy Ellis, Rosemary Ream, James Jones, Russell Cully jr., Elmer Noonan, Warren Quick, Jack Grimes, Kelynn Smith, Arthur Johnson, Glenn Pierson.

Richard Clute, Lewis Neale, Gail Stalker, Theodore Wilson, Laura Bartosh, Robert Gallager, Donald Glascoe, Walden Schultz and Phillip Ausman.

## PASS ACCEPTANCE CHECK

### Computers to Undergo Lab Testing

Lightweight, airborne digital computers developed for Detachment 1 of the Air Force Avionics Laboratory by Northrop Nortronics have satisfactorily completed acceptance and environmental tests and are being integrated into the Holloman Air Force Base aircraft inertial navigation (locating) system.

W. J. Laubendorfer, Air Force technical director for Detachment 1, said the Nortronics NDC-1050A will go through laboratory tests in the coming months and subsequently go into flight testing and evaluation.

Nortronics delivered three NDC-1050A integrated circuit computers and control units and displays under a contract awarded by the Avionics Laboratory, Detachment 1. Purpose of the Hollo-

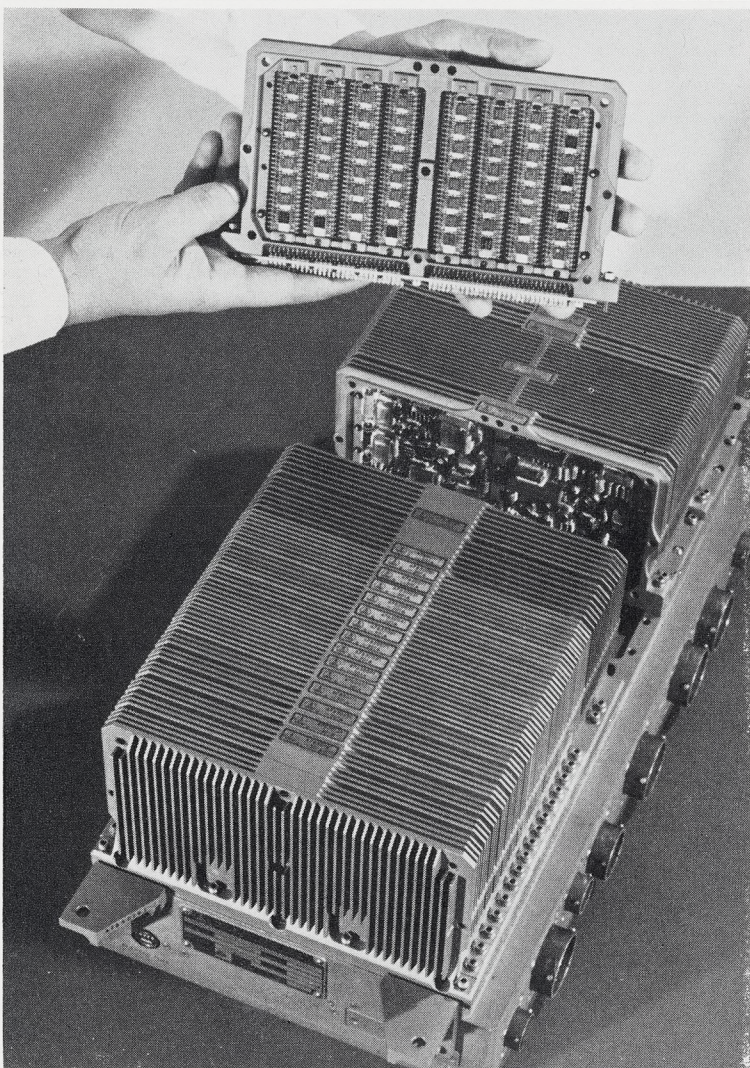
man program is to develop a low-cost, lightweight inertial navigation system for aircraft.

Holloman officials said their goals include a navigation system of high reliability with moderate accuracy, and low cost for the entire navigation system. Two phases of construction are planned by Holloman. Phase A involves the design, development and integration of two systems, leading to flight test this year.

Phase B will involve two systems and should represent the physical achievements of the Holloman goal. B systems will incorporate more advanced technology and components than their predecessors and should eliminate any major weaknesses revealed by system A.

The NDC-1050A is a low-cost, general purpose machine, featuring conductive cooling and a random access 2,048 word memory with transient protection to meet requirements of MIL-STD-704 (power input). The computer also is designed to MIL-E-5400 (airborne equipment) specifications.

The NDC-1050A is unique among airborne computers in that it contains only two full-sized integrated circuit data registers, which is accomplished by utilizing the first 10 addresses of the main core memory for the accumulator and 12 other working registers. The register contents are made available to the arithmetic and control units during each operation cycle.



**LIGHTWEIGHT AIRBORNE COMPUTER** — Northrop Nortronics' NDC-1050A digital computer has completed acceptance and environmental tests at Holloman Air Force Base, New Mexico, and will be integrated with the Holloman Low Cost Aircraft Inertial Navigation (LOCATING) system for laboratory and flight testing.



# NORTHROP NEWS

NORTHROP NORTRONICS

Published biweekly by Northrop Corporation, Beverly Hills, California

Vol. 25, No. 2

February 1, 1967

## Mineral Club To Honor Professor

Doctor Hal Bender, a friend and favorite lecturer for Nortronics Anaheim Gem and Mineral members, will have the tables turned on him February 6 when he appears for his annual presentation.

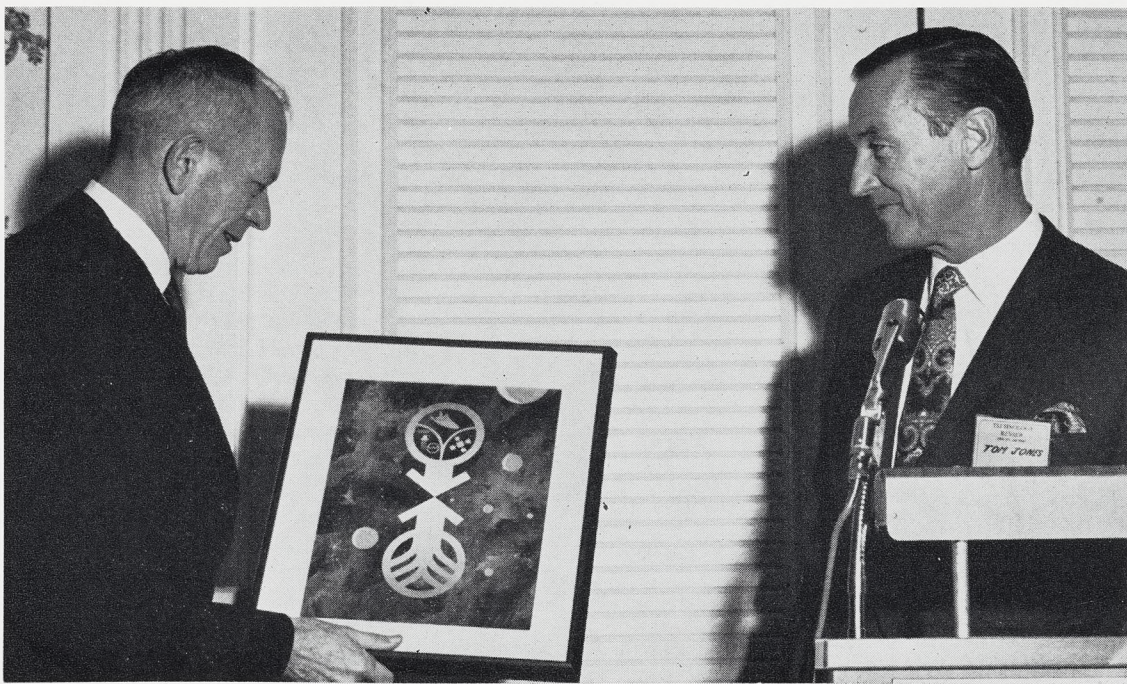
Doctor Bender will be on the receiving end of a presentation—a large seascape painted in oil by Gladys Stellmacher, a club member.

Professor of Geology at Mt. San Antonio College, Dr. Bender gives an interesting and informative talk to the club once each year. The next comes up February 6 at 7:30 p.m. at NRC Clubhouse, Fullerton. That's when the painting will be presented in appreciation for his long service to the club.

Gem and Mineral Club members are currently staging a drive to enlist new members from personnel joining Nortronics. They offer interesting monthly meetings, monthly field trips and workshop sessions from 6:30 to 9:30 p.m., Mondays and Thursdays at NRC Clubhouse.

Further information is available through Carolyn Brittenham, NRC commissioner, at ext. 415.

Of special interest to present or would-be "rockhounds" is an outstanding array of NRC-owned equipment available for use by members, both during workshop sessions and at other times. Too, experienced members offer their services as instructors in the use of this equipment.



AN OIL PAINTING, which commemorates the series of Technology Review programs established to advance communications between industry and the Air Force, is presented to

Major General Marvin C. Demler (left) by Northrop President Thomas V. Jones. General Demler is commander of the Air Force Research and Technology Division.

## Stamp Club Project To Benefit Children

An NRC Stamp Club project that began before Christmas will continue into the new year with residents of the Baptist Children's Home visiting a 7:30 p.m. meeting, February 20, at the NRC Clubhouse, Hawthorne.

NRC members collected stamps and starter albums for presentation to the children at Christmas. Their enthusiastic reception prompted the club to invite the youngsters to a regular meeting.

Currently the club is interested in collecting any sort of foreign or commemorative stamp for use by groups such as this. Northrop employees may assist by sending cancelled stamps to NRC.

## 'Ultra-Accurate' Test Lab Developed by Nortronics

Over the past several years, an unusual paradox became more and more apparent in the testing of inertial sensors (gyros and accelerometers) used in the nation's finest navigation and guidance systems.

The paradox was this—sensors' accuracies improved to such an extent that conventional test equipment and test techniques could not keep pace, and the question naturally arose—"what are we actually measuring, sensor accuracy or test equipment accuracy?"

Northrop Nortronics Precision Products Department (PPD), as a leading developer, manufacturer, and tester of precision sensors, has been involved with this problem since its first appearance. A first request for assistance in resolving the paradox came from the U.S. Navy; others have followed from the Air Force, NASA, and the British Admiralty.

In response to the Navy's request, PPD planned and built a laboratory to create the most precise gyro test equipment in existence, a facility fully capable of testing the improved instruments we can expect to be coming on-stream for the next several years. The laboratory builds "ultra-precision test equipment" (UPTe), and this equipment represents a new standard in accuracy.

"The over-riding thinking in all our planning and design for the laboratory," said Dr. Shigeo Okubo, PPD consulting scientist and manager of the UPTe Program, "was the consideration of stability. This is so important because the slightest instability in even one of the many inputs to the test system can be sensed by the gyro under test and affect its performance.

"Similarly, on the output side (See TEST LAB, page 6)

## FOR NAVIGATION SYSTEM

## 'Coffee Cup' Gyros Produced for C-5

Gyroscopes small enough to fit neatly in an average size coffee mug will help navigate the world's largest cargo aircraft.

Miniature gyros, weighing less than one pound, are being produced for the Air Force's new C-5 fanjet cargo carrier by Northrop Nortronics' Precision Products Department at Norwood, Massachusetts. They will be incorporated into the plane's doppler-inertial navigation system being developed, tested and produced by the Nortronics Division in Hawthorne.

Precision Products is a department of Northrop Nortronics, which was awarded a multi-million dollar contract earlier this year by the Lockheed-Georgia Company for the C-5 navigation system. Value of the Norwood department's participation in the

program is about \$2 million. Lockheed-Georgia Company of Marietta, Georgia, is prime contractor for the giant fanjet, which is scheduled to fly in 1968.

In flight, the gyros will provide the basic reference for sensing every move made by the aircraft which would result in departure from the pre-fixed course. These variances are fed to a Nortronics-developed airborne digital computer which issues corrective instructions to the pilot.

Northrop's designation for the gyro is GI-K7G. It is a cylinder 1½ inches in diameter and 2½ inches long.

The gyroscope uses ceramic gas bearings to replace the more conventional ball bearings. This advance increases the gyro's accuracy and lifetime usefulness.

Gas bearings have been in pro-

## U. S. Air Force Participates In Review

Northrop Corporation conducted a two-day technology review for more than 110 U.S. Air Force scientists and engineers last week at Hawthorne.

Reports by Northrop technical personnel described progress in research and development projects in such areas as spacecraft technology, advanced communications, advanced optical and computer technology and aeronautical design and simulation.

The review included presentations from the Nortronics, Northrop and Ventura Divisions, from the Page Communications Engineers and from Northrop Carolina.

Major General Marvin C. Demler, commander of the Air Force Research and Technology Division, Washington, D.C., headed Air Force participation. Northrop President Thomas V. Jones and Richard E. Horner, senior vice president, Technical, directed Northrop participation. The Northrop project officer was Lloyd K. Jensen of Northrop Systems Laboratories.

The industry technology review program of the Air Force was originated at Northrop in April 1964 under the cognizance of the Research and Technology Division. Since then other aerospace companies have made similar presentations. Last week's presentation opened the second series of these aerospace company reports to the Air Force.

## Guzinski Heads Council

Nortronics Anaheim's Chet Guzinski was installed last month as president of the informal NRC Interdivisional Coordinating Council.

This group, composed of presidents of Northrop Recreation Clubs and Industrial Relations representatives from each location sponsoring NRC, guides all joint activities staged by NRC.



MINIATURE GYROS—Gyroscopes small enough to fit inside a coffee cup will help navigate the world's largest cargo aircraft. The gyros, which weigh less than one pound, are being produced by Northrop for the Air Force's new C-5 fanjet cargo carrier.



## FOR 'MOTIVATIONAL PERFORMANCE'

## Quality 'Salesman' Wins Special Award

Ernie DuRand received a special award last month for his outstanding job of "salesmanship" for Northrop Corporation.

Mr. DuRand, however, has nothing to do with the marketing of Northrop products. Still the job he performs has a direct bearing on many products.

Ernie DuRand specializes in "selling" quality. His "customers" are among the firms who supply all Northrop divisions and subsidiaries with materials, parts, components or systems for its products.

Mr. DuRand is a Quality Control representative, one of 22 serving Northrop in this capacity across the nation.

He works out of Cleveland, Ohio, but covers a 10-state area. Like his counterparts, Mr. DuRand performs certain inspection routines, keeps a constant check on items being produced for Northrop and helps suppliers in every way possible to turn out products of the highest quality.

He is constantly on the go, travels often, spends much time away from home and works long hours with little or no supervision or decision-making assistance.

For these reasons alone Mr. DuRand and his counterparts probably deserve awards for their personal sacrifices.

But Ernie DuRand was singled out for a Zero Defects Award for "Outstanding Motivational Performance," the first of its type



*OUTSTANDING PERFORMANCE wins a Zero Defects award for Ernie DuRand (left). Bob Catlin (right), Norair manager of Quality Control, makes the presentation. With them are L. F. Parker and Dan O'Halloran. Mr. DuRand is a Quality Control representative, based in Cleveland.*

given by Northrop Corporation.

Since Zero Defects was initiated at Northrop, Mr. DuRand has been one of its staunchest supporters. He's talked with hundreds of people about its concept and the value of craftsmanship which is the backbone of Zero Defects.

"Suppliers are anxious to help, willing to improve and generally aware of the results Zero Defects can produce," Mr. DuRand noted. "But sometimes I found it difficult to explain to individuals the im-

portance a valve or pump they make has in the operation of a total system. Remember they have never seen the system, just the part they make."

That's when Mr. DuRand came up with an idea.

He contacted Northrop's Dayton field office and arranged to borrow, first temporarily, then permanently, some Northrop-produced motion pictures showing products in action.

Among those were an F-5 capability film, films of the "Sko-

shi Tiger" evaluation in Vietnam, and a Ventura-produced film called "The Last Five Miles Home" showing the Northrop-built parachute recovery system that returns astronauts from space missions.

He showed the films wherever he could muster an audience, sometimes 10 people, sometimes several hundred. He appeared at lunch and factory breaks, after work and even on weekends on request.

By conservative estimate Ernie has shown his films to more than 4,000 people at upwards of 50 showings over the past two years.

"Sure I spend a lot of evenings, even weekends, in showing these films, but the results are worth the effort," Mr. DuRand says. "They lead to understanding and that is important."

Bob Catlin, Northrop Norair manager of Quality Control, presented the Zero Defects Award to Mr. DuRand. It is a special desk set complete with pens and an engraved plaque.

"Ernie and our other Quality Control representatives are doing an outstanding job for Northrop, not only in their day-to-day assignments, but in special cases such as this," Mr. Catlin said.

"No one told Ernie to take on this added assignment. He did it on his own. That's why I say he is a true 'salesman' for Northrop in every sense of the word."

## Open House At Santa Fe Draws 1,000

Approximately 1,000 Northrop Norair employees and their families participated in an open house ceremony last week at the new Santa Fe Facility.

The Santa Fe Facility, at Artesia Boulevard and Santa Fe Avenue, near Long Beach, is the permanent quarters for the Subcontract Operations group, engaged in the production of the aft fuselage and outer wing assemblies for the Boeing 707.

The ceremony was held on January 29.

Jack Mannion, vice president of Manufacturing and Materiel, delivered a welcoming address, in which he congratulated the employees for the effectiveness with which they accomplished the recent move from Norair Hawthorne facilities.

William J. Minner, superintendent of Operations, and his supervisors served as hosts. Following a tour of the 132,000-square-foot manufacturing area, guests were served refreshments.

## Speaking Course Filled; Others To Be Scheduled

Response to the Northrop Toastmasters Club's eight-week public speaking course has forced the group to halt additional enrollment and establish a waiting list for future classes.

The course began on January 12 and will meet each Thursday night until March 2 in the Norair Executive Dining Room.

Club officials said a similar course will be offered following completion of the current one.

Speaker for the first session was Verne Reynolds, Norair supervisor of Communications and Supervisory Training. Mr. Reynolds, who has a master's degree in public speaking, presented "Introduction to Public Speaking." Other classes will include finding and organizing speech material, mechanics of presentation, and chairmanship of meetings.

## AD ASTRA PER ASPERA

## Arata Named as AIAA Theme Chairman

Winfield H. Arata, jr., deputy director of Commercial Navigation Systems for Northrop Norair, will be theme chairman for a portion of the fourth annual meeting and technical display of the American Institute of Aeronautics and Astronautics.

The meeting will be held in the new Anaheim Convention Center from October 23 through 27.

The program will emphasize the aerospace industry's "interaction with society." Three major themes will be covered, in which aerospace officials will project the industry's future, based on past and present trends.

Mr. Arata will be theme chairman for the "Safety in Manned Operations" segment.

The study will include investigation of safety operations in underwater operations, aircraft activities within the atmosphere, and those dealing with space systems.

Mr. Arata also will be arrangement chairman for the national meeting of the Institute of Navigation, which will be held in Los Angeles on March 14 and 15. "Space Navigation" is the title of the meeting.

George R. Mills, control system design specialist at Norair, will present a text, "Techniques for Improving the Quality of Motion Reproduction in Moving Base, Piloted, Flight Simulators," at the American Institute of Aeronautics and Astronautics Flight Test, Simulation and Support Conference. The convention will be in Cocoa Beach, Florida, February 6 through 8.

Frank F. Crandell, Paul T. Glamkowski and Charles A. Luke of Nortronics Electro-Optical

Tracking Systems will present a paper, "A Computerized Method of Optimizing Design of Airborne Electro-Optical Image Recording Systems, Using Modulation Transfer Function," during a session of the Airborne Photo-Optical Instrumentation seminar.

It will be conducted by the American Society of Photogrammetry and the Society of Photo-Optical Instrumentation Engineers, in Cocoa Beach, on February 20 and 21.

J. G. Tapp, chief of the Advanced Avionics Systems group at Nortronics, last week delivered a paper on "Warranty of Navigation System Performance." Mr. Arata was co-author.

The text was delivered at a symposium conducted by the Canadian Aeronautics and Space Institute, in Montreal, Quebec.

Also last week, Dr. G. M. Andrew and M. S. Cahn, research aerodynamicists at Norair Engineering Applied Aerodynamics and Performance branch, presented their paper, "Determination of Subsonic Drag Rise by Limit Line Analysis in the Hodograph Plane," in New York, January 23.

According to Dr. Andrew, a hodograph representation may give a better understanding of the conditions for the formation of a strong shock or drag divergence. It can be shown that the conditions for the existence of flow breakdown can be determined from the hodograph plane. Where a decelerating streamline becomes tangent to the characteristics lines in the hodograph plane, steady isotropic flow will break down and a limit line will exist.

A study of this hodograph analysis suggested a direct method for transonic airfoil design. These

concepts seem able to explain the physics of the crestline rule. Also indicated is the possibility of using large trailing edges with boundary layer control to prevent separation.

The word hodograph (from the Greek hodos or path plus graph or line) is used to refer to a representation where any point represents the extremity of the velocity vector at a point in the physical plane. A simpler way of stating this is that the vertical axis represents the magnitude of the vertical velocity component, and the horizontal axis represents the magnitude of the horizontal velocity component.

## Norair's Dr. Hwang To Head UCLA Class

A Northrop Norair executive has been named chief instructor of a five-day course in aerospace structures, to be held at UCLA in April.

Dr. C. Hwang, who heads the Structures and Dynamics Research branch at Norair, will give two lectures at the April 10 through 14 course, titled Dynamic and Thermal Scale Model Testing Techniques in Aerospace Structures.

Dr. Hwang will lecture on April 12 on basic theory in structural dynamics as applied to scale model design. On April 13, he will discuss structural model design and dynamic scaling relations.



*IT'S A 'SPEAKEASY'—Verne Reynolds, supervisor of Communications and Supervisory Training, speaks at the opening session of the Northrop Toastmasters Club's "Speakeasy" pub-*

*lic speaking course. The eight-week course began on January 12 and will conclude on March 2. The course has a full enrollment.*



## 1,100 FEET UNDERGROUND

## Nortronics Helps Build Unique 'Salt Mine' Lab

A salt mine, 1,100 feet beneath one of the nation's largest cities, might seem to be an unlikely location for a Northrop Nortronics designed laboratory of ultra-precision test equipment (UPTE).

But the city is Detroit, and the lab is part of the Michigan Missiles and Space Division of Ling Temco Vought Aerospace Corporation.

The unusual location was first suggested by LTV officials when they asked Northrop Nortronics' Precision Products Department in Norwood, Massachusetts, to survey the mine site as a possible lab site.

It had been determined that the metropolitan Detroit area was not suitable for a UPTE lab because of what was termed "cultural" noise. This meant that man-made distractions, such as vibrations caused by cars, trucks and industry, could hamper the accuracy of the tests.

One alternative considered was to construct a lab with a test pad connected by concrete columns to bedrock, 100 feet below the surface of the earth. This proposal was considered too expensive.

Finally, the salt mine location was suggested, and PPD's tests determined that the mine was an ideal location for the laboratory.

An ultra-precision test equipment lab is one which specializes in pinpoint accuracy in testing. When an inertial guidance system or navigation system becomes so precise that ordinary test equipment is incapable of testing it, the ultra-precise gyro equipment as used by PPD is needed. Naturally, outside noises or vibrations could greatly reduce the accuracy of such a lab.

At the mine area, PPD was asked to provide assistance by locating a true north-south line by use of a gyrocompass.

"This was a difficult problem," PPD consulting scientist Shigeo Okubo said, "because a north-south line generally is established from ground level on a horizontal plane.

"When you're a thousand feet

underground, and have to locate the line vertically, the job is a little more complex."

LTV leased a small section of the mine from International Salt Company. The room, carved out of solid salt crystal, is 50 feet wide, 68 feet long and 18 feet high. The lab will be nearly two miles away from the mine's shaft, and one mile from present mining operations.

Moving into the mine presented unique problems, however.

"The temperature never varies more than one degree all year," Dr. Okubo said, "but that temperature is 58 degrees. We had to wear jackets down there."

Ordinarily, PPD gyro equipment is kept at a constant 72 degrees, and a gyro during testing is controlled to within one-tenth of one degree.

Consequently, LTV scientists and engineers will use a heating system to run tests on inertial guidance systems when the lab becomes operational next month.

It had been feared that salt corrosion on the delicate instruments might be another problem. This fear, however, proved false.

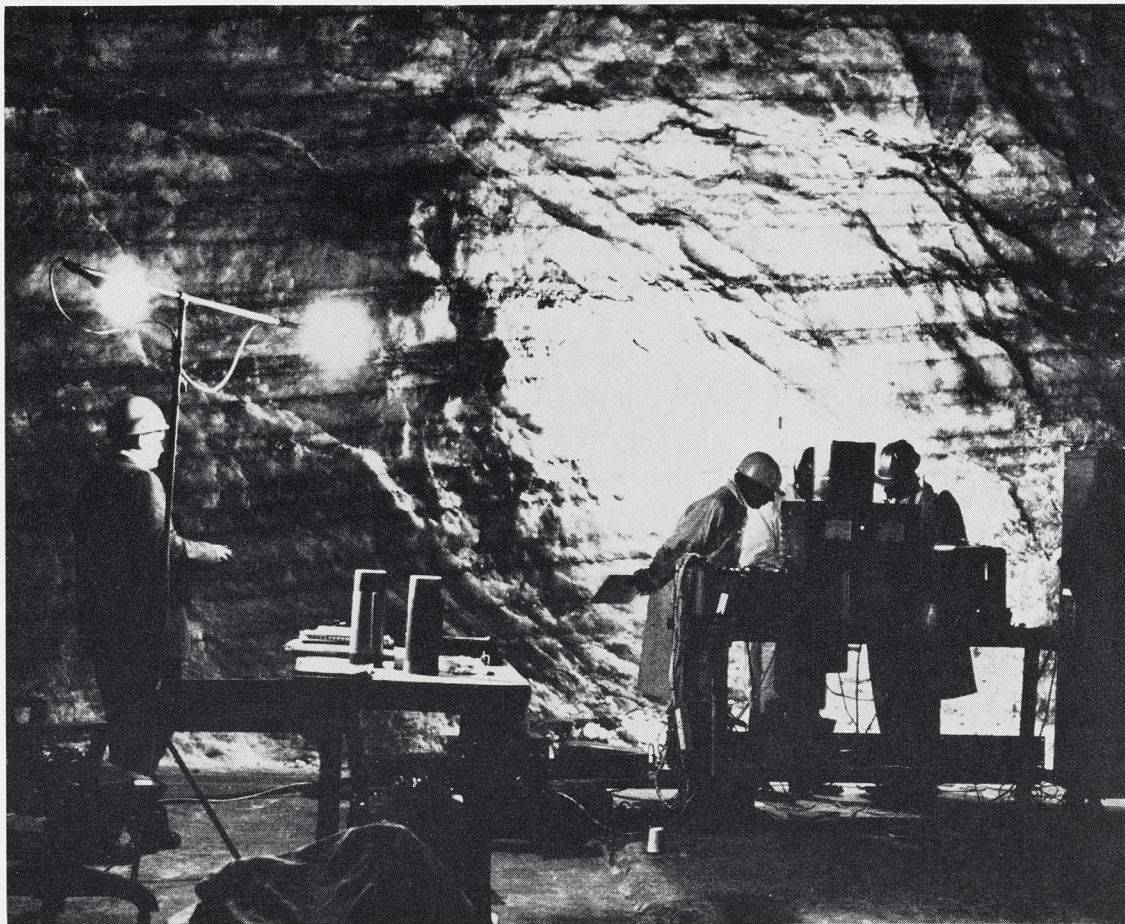
"We placed several exposed metal parts in the mine area as a test for corrosion," Dr. Okubo said, "and, although there was slight discoloration, corrosion was negligible."

The next step called for the installation of permanent test pads, mounted on bedrock, and the establishment of a permanent north-south line.

"The only problems encountered here were logistical," Dr. Okubo said. "Getting all the heavy equipment down there called for different procedures than we ordinarily use."

But the mine has a large freight elevator, and this problem, too, was solved.

Officials at LTV's Michigan Missiles and Space Division said they believe this is the first time that navigational tests have been conducted in such a location. So, if an LTV engineer tells you he's headed for another day in the salt mines, you'd better believe it.



**SALT MINE LABORATORY** — Engineers of the Michigan Missiles and Space Division of LTV Aerospace Corporation huddle over test equipment in a salt mine, 1,100 feet below Detroit. Nortronics' Precision Products Department

helped LTV locate test equipment in the abandoned area of the huge mine. The room, 50 feet wide, 68 feet long and 18 feet high, is carved from solid salt crystal. Temperature in the salt mine is 58 degrees.

## European Trip Meeting Planned

A final meeting of the NRC Travel Club members taking part in a group trip to Europe in early summer will be held at 7:30 p.m., February 25 at the NRC Clubhouse, 1834 W. Valencia Drive, Fullerton.

Well over 100 travelers have booked reservations on this excursion, but a limited number of reservations are still available. They may be reserved through any Northrop Personnel Activities office.

Plans for the meeting call for passport photographs to be taken, flight bags issued and special insurance issued for those who desire it, according to Randy Lee of Nortronics, tour director. A representative of the booking agency will also be on hand to answer special questions.

This 21-day excursion departs May 18 and returns June 7.

## Scholarship Plan Continues For Children of Employees

College scholarships for the sons and daughters of Northrop Corporation employees are again available through Northrop's continued support of the National Merit Scholarship Corporation program.

Richard E. Horner, Northrop senior vice president—Technical, last week announced continued support of this effort and emphasized that Northrop sons and daughters everywhere are eligible to compete for these scholarships.

Mr. Horner is responsible for coordinating this effort in his capacity as chairman of the Northrop University Relations

Advisory Board.

Northrop youngsters entering the second semester of their junior year or first semester of their senior year in high school should register now with their school to take the NMSC qualifying test.

Those who find their schools are not participating in this program may contact Lee Thornton at ext. 4754 at Northrop Norair for special instructions.

All children, natural or legally adopted, of regular employees as well as the children of retired or deceased employees of Northrop are eligible to compete.

## Executive Service Corps; An Active Way to Retire

If you're getting ready to retire and can't face the thought of all that leisure, ask any of Northrop's retirement counselors to tell you about the International Executive Service Corps (IESC).

IESC is this country's first experience in private industry aid directly to private industry in other countries.

Established in 1964 by leaders of the U.S. business community, with federal government sponsorship, IESC this year will have 275 to 300 volunteers helping to build a strong base of vigorous private enterprise in 32 developing nations of the world.

Volunteers are, for the most part, retired businessmen or specialists who have seized the opportunity to continue to put their know-how and experience to the highest use. They receive no salary, but they and their wives receive travel and living expenses while on the one to six months assignments.

With nearly 200 volunteers returned from their assignments of the past two years, the successful reports have more than justified the confidence of IESC founders

in the concept of business-to-business foreign aid.

Requests for American business know-how come to the IESC directly from companies abroad which may have a single technical problem or problems ranging upward in complexity to requirements for a complete restructuring. The IESC, upon approval of a project, seeks to locate a volunteer executive whose skills and experience match the job to be done.

The non-profit IESC recently opened an office in Los Angeles and named William Larrabee, Northrop vice president—Industrial Relations, to its council of advisors.

"Whether you have retired or are about to retire from active business life, IESC is interested in you if you have proven managerial or technical skills and experience and are interested in short term assignments overseas," Mr. Larrabee said.

Northrop's divisional retirement counselors, who can provide further information on IESC, are: Harry Belcher at Nortronics, Dave Cocks at Norair, and John Via at Ventura.



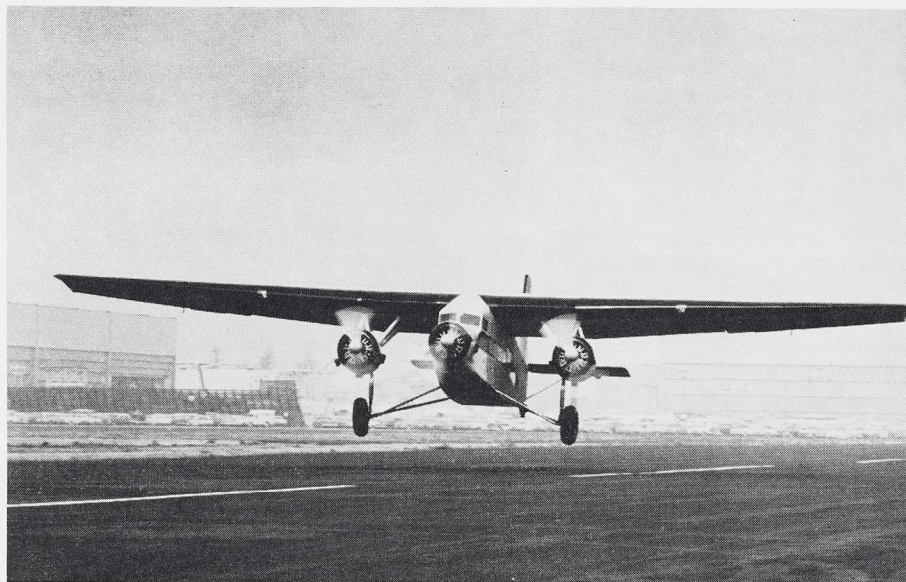
**THE EXECUTIVE SERVICE CORPS**—William Larrabee (left), Corporate vice president of Industrial Relations, talks with Arthur Schoenberg (right), manager of the Beverly Hills office of the International Executive Service Corps.

With them is Lee Collins, IESC Los Angeles representative. The organization, sponsored by the Agency for International Development, sends volunteers to foreign nations to help business and industry.





A FAMILIAR SIGHT to long-time aviation enthusiasts, even though it's newly built, is the Bushmaster 2000. Here, reporters and photographers crowd around the Bushmaster at Long Beach Municipal Airport, where it was first flown. The Bushmaster 2000 is patterned after the Ford Tri-Motor, built from 1926 to 1932.



A DREAM COMES TRUE for a small group of men who have planned since 1956 to build an updated version of the Ford Tri-Motor as their plane—the Bushmaster 2000—lifts off the runway at Long Beach Municipal Airport. It is powered by three 450-horsepower engines.

## LATTER-DAY FORD TRI-MOTOR

# 'Tin Goose'—1967 Style—Recalls Early Days of Flight

The "Tin Goose," the famous Ford Tri-Motor airplane which filled America's skies in the 1930's, soon may be back in greater numbers than ever before.

The Tri-Motor, built from 1926 to 1932, saw service on every continent, carried Admiral Richard Byrd over the South Pole, and was used by nearly every major airline in the United States during the early '30's.

Much like another Ford of that time, the Model A, the high-winged Tri-Motor acquired more than its share of devotees.

Among them was Ray Moore of Northrop Corporation, who saw in the Tri-Motor a rugged, reliable, low-cost airplane for which there was still a sizeable market.

William B. Stout, who originally developed the all-metal plane, also envisioned a rebirth for the "Goose," and he, Mr. Moore and eight other men formed Hayden Aircraft Company in 1955.

They obtained the original Tri-Motor blueprints from Ford Motor Company. Mr. Stout had sold them personally to Henry Ford in 1925, when Ford purchased the Stout Metal Plane Company.

But Mr. Stout died in 1956, bringing a temporary halt to plans.

In 1958, Aircraft Hydro-Forming Company became majority stockholder of Hayden, and the

men began to re-engineer the Tri-Motor.

"We obtained the evening and weekend services of 28 Northrop people," Mr. Moore said, "and the present design was established."

"We bought an old Tri-Motor, and conducted extensive flight tests with it. That ship is now in the possession of the Smithsonian Institute in Washington, D.C."

The modern Tri-Motor—called the Bushmaster 2000—was flown recently at Long Beach Municipal Airport, and is in the process of receiving its certification from the Federal Aviation Agency.

The manufacturer, Aircraft Hydro-Forming, incidentally is a supplier of bomb racks to Norair for the F-5.

"We believe we can build as many as 10 planes each month," Mr. Moore said, "if orders warrant full production. Once the FAA clears us, we'll start soliciting orders."

At a rate of 10 planes each month, Aircraft Hydro-Forming would build more Tri-Motor airplanes in two years (240) than Ford did in six (196).

Peak production years were 1928 and 1929, when a total of 146 left the assembly hangars in Dearborn, Michigan.

Mr. Moore is cognizant engineer on Northrop's Mariner

Mars '69 Project, in charge of structure and assembly. His connection with the Tri-Motor is that of stockholder and member of the board of directors.

Of the original Northrop people who joined the Tri-Motor project, 10 are still Northrop employees. They are, in addition to Mr. Moore:

Robert E. Brough, Earl E. Parks, William F. Diesablon, Pierre K. Domercq, Kenneth M. Saum, Sheldon Bresin, Sherwood Brown, William L. Harris and Nelson W. Burris.

When the Bushmaster 2000 was unveiled at Long Beach, newsreel reporters and photographers flocked all around it. One television station followed the Bushmaster's flight from a helicopter.

The original Tri-Motor came upon hard times in 1929—as did the rest of the nation. Higher-speed airplanes which were introduced in 1932 and 1933 also contributed to force the Tri-Motor out of sales competition in the passenger business.

"The Ford Story," a book written on the history of the Tri-Motor, said it was the next several years which proved the plane's real worth—as a cargo carrier.

"The all-metal construction, stressed so much by the Ford advertising campaign of the late

1920's, proved its worth," the book said.

"Probably to the surprise of its engineers and builders, this rugged airplane entered a whole new field of endeavor—that of the heavy-duty freight carrier—which was to last far longer than the period of service for which it had been originally designed and built."

In the 1930's and '40's, Tri-Motors were used by the U.S. Army, Navy and Marine Corps. They were operated on wheels, floats and skis. They still carried passengers—largely on rural short-hop flights—and they dusted timber, sprayed crops, hauled machinery, gasoline, oil, cattle and copper ore. At least 25 are still in use.

They were especially favored by the touring daredevils, parachute jumpers, acrobats and assorted wing-walkers who flew their way around the nation in the '30's.

At an estimated cost of \$175,000, the Bushmaster 2000 probably won't find many wing-walkers among its customers, but Mr. Moore said the firm expects to get orders from virtually every other field.

"Its versatility allows it to take off or land, fully loaded, in 600 feet of grass field," he said.

"We anticipate that many of

our orders will come from small foreign airline companies; mainly for carrying cargo, but also for short-haul passenger service. We recently had inquiries from an airline in Madagascar."

Although the Bushmaster is derived from the Tri-Motor, it's far from being a copy.

Among the improvements included by Aircraft Hydro-Forming are the three Pratt and Whitney R985 engines, which develop 450 horsepower.

Early Ford Tri-Motors had 300-horsepower Wright "Whirlwind" engines, while later models had a forerunner to the R985.

Other improvements include the addition of a large cargo door, the use of stronger aluminum for the structure, a reinforced cargo compartment floor, a larger windshield and a larger, modern cockpit area. The fuselage is 13 inches wider than that of the original Tri-Motor.

FAA certification is expected soon, Mr. Moore said, since flight tests have been conducted.

"The Bushmaster is efficient; it is not a luxury airplane," a brochure published by the manufacturer says.

"It is intended . . . to fulfill a world-wide need for a workhorse airplane—an aerial truck."

Aircraft Hydro-Forming describes its new plane aptly as "an all-new airplane with a 40-year heritage of success."

## 200 ATTEND DINNER

# NRC Groups Install Officers

Jim McKanna and Dick Paramore were installed as presidents of the Norair and Nortronics NRC Councils last week, at a dinner meeting which brought an estimated 200 employees and their families to the Western Avenue Country Club.

Mr. McKanna, the Norair president, was installed to replace Bill Wareing. Mr. Paramore, of Nortronics, replaced Joe Kalina.

William Larrabee, Corporate vice president of Industrial Relations, was keynote speaker. Among other things, he praised the Recreation Councils for the new interdivisional Retiree Club.

"I am tremendously impressed with what has been done in a very short time with the Retiree Club," Mr. Larrabee said.

"I suppose that some people wonder why a company is inter-

ested in people after they retire. Of course, we like to recognize their long service to Northrop, but—even more importantly—the existence of this club gives lots of us who are nearing retirement age a means of retaining our Northrop friendships."

Other Norair officers installed were Dick Cade, vice president; Dorothy Walls, secretary; Bill Lewis, treasurer; and Fred Griffin, sergeant-at-arms.

From the Nortronics Hawthorne and Palos Verdes group, other new officers include Maury Shulman, vice president; Dorothy Baldwin, secretary; Jeanne Andrecht, treasurer; and Danny Gravlin, sergeant-at-arms.

Earlier in the month, members of the NRC group at Nortronics Anaheim held their annual installation. Chet Guzinski became president, replacing Bob Benedict.

## Ordinance Group Presents Award To R. R. Miller

A Northrop Corporation senior vice president has received an award from the American Ordnance Association, honoring him for "faithful service to the national defense of our country."

Robert R. Miller, senior vice president of Corporate Relations, was presented a plaque on January 17 by C. C. Gabrielson, western area vice president of the Association.

Mr. Miller is a director and a former president and chairman of the board of the AOA's Los Angeles chapter.

"This plaque is presented to Robert R. Miller," the award read, "on behalf of the American Ordnance Association . . . dedicated to scientific and industrial preparedness as one of our nation's strongest guarantees of national security and peace."



CHICAGO GROUNDBREAKING—Turning the first shovels at recent groundbreaking ceremonies for a new 210,000-square-foot administration and engineering complex of the Hallicrafters Company are (from left) Hallicrafters President Robert F. Halligan, Northrop President Thomas V. Jones, and Hallicrafters founder William J. Halligan, sr. Hallicrafters has been a Northrop subsidiary since December.



Classified

Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private business are not accepted. The Northrop News reserves the right to edit or omit ads. Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 64. Ads are limited to one item. Deadline is noon Wednesday, one week before publication.

For Sale

Lot, R1, adjoining Santa Monica Fwy., 8,300 sq. ft., \$16,600. W. L.A., 394-0402. A

Ford, 1950 Ranchero, new paint, r/h, \$395. Lawndale, 679-5827. A

Dresser, 3-drwr., maple, \$30. Hawthorne, 679-7544. A

Tires, 3, 7.75 x 14, \$10 ea. L.A., GR 4-7895

Condominium Apt, Gold Medallion, 2-bdrms., 2 baths, fireplace, bltin kitchen, cpts., dps., furn., at Mammoth Mtn. ski area, rentable at \$36 a night, \$24,500. Rolling Hills Ests., 378-0590. A

Mobile Home, Broadmore, 20' x 56', cpts., 3-bdrm., 2-bath, awnings, skirting, utility house, \$10,500. Torrance, 834-9771. A

TV, 21" Hoffman console, \$50. Torrance, 325-4869. A

Supercharger, 427, 406, 390, complete, for 1961 Ford Starliner, \$175. So. Gate, SP 3-4171. A

House, 3-bdrm., 2-bath, fireplace, cpts., dps., air cond., in Anaheim, \$175 mo. rent or \$25,900. Orange, 637-8245. A

Poodle, AKC reg., silver male, 2 yrs. old, \$50. Garden Grove, 714-537-1120. A

Drafting Machine, 16" w/wood case, \$25. Manhattan Bch., 379-3487. A

Apt, pullman-type kitchen, bltins, 4-bdrm. or 3-bdrm. & den, 1/2-bath on 1st floor, 2 full baths on 2nd, dps., cpts., 2-car gar., adjoining pvt. patio, clubhouse w/lge. pool & wading pool, close to schools, \$28,950. Torrance, 327-3160. A

Cad-Allard, K-3 mod., convt. w/roll-up windows, good top, tube chassis, alum. body, DeDion rear susp., \$2,000. L.A., EX 8-5019. A

Bed-Divan, Early American, brown tweed, innerspring mattress, \$50. Rolling Hills Ests., DA 9-9407. A

House Trailer, Peerless, 27', alum., tandem whls., sleeps 4, 12' refrig., 120 volts, natural gas or butane, 2-dr. entrance, \$100 equity & take over \$34 mo. pymnts., \$580 bal. Box 201. A

Jaguar, XK120, 1954, convt. top, tonneau, roll bar, recently o/hauled, needs some body work, \$650. Box 202. A

House, 4-bdrm., 2-bath, 2-car gar., family rm., bltin elec. range, oven & dishwasher, sprinkler sys., \$31,500. Gardena, DA 3-0037. A

House, 3-bdrm., 1 3/4 bath, custom features, used brick fireplace, landscaped, fenced, patio, shutters, cpts., dps., 2 1/2-car gar., 10% dn., 1 1/2 miles to Ventura Div., \$22,000. Newbury Pk., 805-498-3043. A

Pool Table, 7', 2 que sticks, ground balls, \$50. Fullerton, 871-4623. A

Transmitter, amateur, Heath Kit DX 100, \$55. Hawthorne, OS 6-6949. A

Thunderbird, 1955, 2 tops, interior & many other new items, \$1,100. Manhattan Bch., 545-5345. A

Telescope, 6" reflector, 60mm guide scope, clock drive, setting circles, camera mount, \$220. Los Alamitos, 596-1257. A

MG Midget, 1964, r/h, w/w, wire wheels, tonneau, \$950. Anaheim, 772-2439. A

Refrigerator, small camper-type, 110 volt, gas, or 12 volt, \$100. Rolling Hills, FR 7-3487. A

Volkswagen, 1963, 113 sedan, radio, extras, \$1,050. Inglewood, OR 7-7914. A

Headboard w/sliding doors, twin size, maple finished hemlock, \$5. P.V. Pen., 377-3806. A

Tables, lamps, 2 Danish modern end tables, walnut, & 2 matching table lamps, \$50. Torrance, DA 5-7705. A

Mini Bike, Steen Taco, model 66, Briggs & Stratton eng., disc brakes, front & rear suspension, 6 mos. old., \$125. P.V. Pen., 377-6202. A

Boat, fibreglass, 14'2", w/trailer, no motor, new steering in, anchor & dars, just re-painted, \$205. L.A., 673-1707. A

Tape Recorder, Pentron, \$25. Torrance, 371-8395. A

Chevrolet, 1957 Nomad, b/seats, chrome rims, new paint, \$950. Inglewood, OR 2-1716. A

Drafting Machine, K & E Paragon, 12" & 18" plastic scales, standard size, \$75. Inglewood, 672-8521. A

Camera, Alpa 35mm, single lens reflex, fl.8 auto., MacroSwitar lens & case, \$185. Sherman Oaks, ST 8-9709. A

Pickup, 1955 Dodge, 1/2 ton, V-8, r/h, auto. trans., new eng., tires & paint, \$550. Harbor City, 326-1856. A

Pontiac, 1965 Grand Prix, f/air, p/s, p/b, tri. pwr., mag. wheels, orig. owner, reasonable financing avail., \$2,395. L.A., 671-3361. A

House, 3-bdrm., 1 3/4 bath, sep. dining room, near schools, shopping & El Camino, fireplace, fenced yard, No. Torrance location, \$175 mo. rent or \$25,500. Torrance, DA 9-2403. A

House, 3-bdrm., 1 3/4 bath, covered patio, sprinklers, other extras, 2 blocks from El Camino, 10% dn., immed. occupancy, in Gardena, \$24,950. Huntington Bch., 714-842-2636. A

For Sale

Lawnmower, Craftsman deluxe rotary, just o/hauled, 2 3/4 h.p., \$25. Hawthorne, 676-7109. A

Pontiac, 1955 h/top, r/h, Hydromatic, nearly new tires, master cylinder rebuilt, new fuel pump, \$150. Lakewood, HA 9-8734. A

Typewriter, Smith-Corona standard, \$30. Hawthorne, 679-9621. A

Chevrolet, 1962 Impala, p/b, p/s, factory air, V-8, auto., \$1,050. Redondo Bch., FR 5-5760. A

Desk, modern 6-drawer, silver fox finish, \$20. Gardena, 635-3127. A

Volkswagen, 1965, 11,000 miles, \$1,300. Long Bch., GA 6-1886. A

Pistol, Hy-Hunter, 45 cal. frontier model, \$50. Garden Grove, 714-897-9182. A

Drum Set, 4-pc. Crown, blue sparkle, 3 mos. old, cost \$200; \$160. Van Nuys, 781-3854. A

Dining Table, oval, French prov., 42" x 54" w/2 12" fills, cost \$125; \$30. Manhattan Bch., FR 4-8036. A

Wheelchair, \$75 & walker, \$35, or both for \$100. Hawthorne, 679-2330. A

House, 2-story, French prov., 3-bdrm., 2 baths, extra lge. fenced yard, elem. school across street, 1/4 mile from end of Harbor Fwy., San Pedro, \$25,500. Huntington Bch., 714-842-2732. A

Corvair Monza, 1961, 2-dr., 4-spd., r/h, 1 owner, \$495. L.A., NO 3-6883. A

Sprite, 1962, 1965 eng., new trans. & clutch, \$750. P.V. Ests., 377-9881. A

Tires, Atlas Bucron, pr., 8.00-14 w/6" wide Olds rims, \$45. Hawthorne, 675-2813. A

Volkswagen-Camper, 1960, 500 miles since motor o/hauled, good tires, \$850. Anaheim, 772-4103. A

Kitchen Step Stool, yellow seat & back, 2 steps, \$9. Hawthorne, 679-7325. A

Bicycle, 26" Schwinn Continental, 10-spd., \$45. Van Nuys, 780-8912. A

Pickup, Chevrolet Fleetside w/deluxe camper, 1965, full equipment, 8,000 miles, \$2,150. Inglewood, OR 4-0870. A

Honda, 55 trail bike, w/spark arrestor, rack & Bell helmet, \$200. Hawthorne, OS 6-3886. A

Drums, \$145. Torrance, DA 9-2925. A

Folk Guitar & case, steel strings & tuning record, \$35. Rolling Hills Ests., FR 5-8536. A

Pontiac, 1937 2-dr. cpe., classic, orig. condition, \$225. Hawthorne, 678-6027. A

Chevrolet, 1962 Impala 4-dr. h/top, r/h, p/s, p/b, auto. trans. \$1,250. Redondo Bch., 370-9795. A

Shotgun, 20 ga. H & R single shot w/recoil pad, 2 yrs. old, \$20. Torrance, 327-4585. A

Tire, Atlas, Plycron, 8.20 x 15, \$30. L.A., 670-5627. A

Chevrolet, 1961 2-dr. sedan, r/h, p/s, low miles, new tires, \$695. Inglewood, 673-1097. A

Porsche, coupe, 1600, 1958, b/seats, s/belts, wood interior access., Koni shocks, Bursch exhaust w/stinger, AM-FM radio, \$1,700. Redondo Bch., 376-3525. A

Chevrolet Impala, 1964 9-passenger station wagon, p/s, tilt-wheel, new tires, V-8 eng., \$1,950. Sepulveda, 892-8066. A

Dodge Dart, 1960, V-8, auto., r/h, recent paint, \$300. San Pedro, 831-5644. A

Horse, reg. AQHA mare, buckskin, 3 1/2 yrs. old, gentle & sound, broke to ride, \$650. Torrance, DA 9-2016. A

Battery Charger, Universal 6v-8v-12v for car or boat, \$4.40. So. Pasadena, 799-9476. A

Mobile Home, Roadcraft, 50', \$3,500. Gardena, 329-5879. A

Tape Recorder, Panasonic, 1 yr. old, 2 spds., plugs for extra speaker & to record, \$60. Gardena, 329-9484. A

Dinette Table, oval, chrome, w/2 leaves & 6 chairs, \$25. Hermosa Bch., 379-8091. A

Falcon, 1964 station wagon, 4-dr., deluxe model, factory air, p/s, V-8, auto., rack, extras, low mileage, fact. warranty avail. for \$25, \$1,495. Tarzana, 345-6391. A

Camper, fits standard bed, sleeps 3, stove, sink, refrig., lots of extras, \$190. Hawthorne, OS 6-3792. A

Sportswagon Camper, 1965 Dodge, V-8, auto., r/h, anti-spin 3000 lb. rear axle, hvy. duty battery, many extras, camper equipped w/sink w/hand pump, stove, expandable roof, ice box, seats 8 as wagon, sleeps 5 as camper, cost \$4,300; \$2,850. Newbury Pk., 805-498-3473. A

Thunderbird, 1956, completely restored, 2 1/2 tops, \$1,450. Encino, ST 3-5412. A

Motorcycle, Honda, 1966, 160 cc Scrambler, \$500. Gardena, 323-6759. A

House, 3-bdrm., 1 3/4 baths, dps., cpts., covered patio w/bltin barbeque & planters, lawn sprinklers, near schools, \$27,500. Hawthorne, 679-6247. A

Thunderbird, 1958, convt., new top, seat covers, 35,000 miles, \$495. L.A., 837-4036. A

Lot, in Upper South Shores, 143' frontage, ocean view, \$5,000 dn., \$13,000. San Pedro, TE 3-2512. A

Journal of Applied Physics, 12 back issues, from 1962 & 1963, \$12. Marina del Rey, 823-2655. A

Corvair, 1962, 4-dr. sedan, auto., r/h, \$550. Woodland Hills, DI 6-7829. A

Chevelle, 1964 Malibu S.S. convt., V-8, Powerglide, p/s, radio, \$1,450. Norwalk, 865-5878. A

Dodge Dart, 1963, model 270, standard shift, r/h, \$700. Cypress, EX 8-1869. A

Malibu S.S., 1964 spt. cpe., 220 h.p., p/s, p/b, Powerglide, \$1,800. Woodland Hills, 348-1053. A

For Sale

Corvette, 1962, 340 h.p. 327, 4-spd., removable h/top, \$1,800. Hawthorne, 322-2544. A

Mustang, 1965, 225 h.p. V-8 eng., 4-barrel carburetors, stereo, 4-spd. trans., positraction rear end, \$1,800. L.A., 472-3938. A

Transmission, new 4-spd., for Ford, bell housing, clutch & pressure plate, 11" for big block, \$155. El Segundo, 322-3420. A

House, 3-bdrm., fireplace, dining rm., sun porch, dbble. lot, heated pool, lge. walled patio, 24 x 24 detached rec. room w/bar & fireplace, dbble. gar., dbble. parking apron, 15 min. to Northrop, \$37,500. Manhattan Bch., 374-8744. A

Ford, 1959, V-8, 4-dr. station wagon, r/h, auto., 1 owner, \$395. Gardena, 676-0432. A

TV, portable Packard Bell, \$70. L.A., 939-3264. A

Chevrolet, 1959 2-dr. Biscayne, 283 V-8, 3-spd. stick, new tires, \$700. Redondo Bch., 370-7130. A

Screen, radiant 40x40 beaded, \$3. Wilmington, 835-3869. A

Tape Recorder, \$35. Redondo Bch., 370-0250. A

Honda, 1965 305 Superhawk w/scrambler bars, 2 helmets & extras, \$500. Torrance, 326-6195. A

Volkswagen, 1965 Variant, station wagon, 1500 S, \$1,695. Anaheim, 714-828-3718. A

Mustang, 1965, h/top, V-8, 4-spd., handling pack, posi 3:50, \$2,225. L.A., PL 5-4055. A

House, 3-bdrm., 2-bath, fireplace, cpts., dps., bltins, dishwasher, dbble. gar., fenced yd., Huntington Bch. area, \$2,000 or less down, no loan or escrow cost, 5 1/4% FHA loan, rent or lease for \$155 mo., \$21,400. Torrance, DA 9-9464, DA 7-8994. A

Command Receivers, 3 units, 190 to 550 KC, 3 to 6 MC, & 6 to 9 MC, \$12. Norwalk, 865-6736. A

Auto Parts, Fenton floor shift, flywheel, clutch, housing, trans., to convert a 292 or 312 Ford auto. to floor shift, 3-spd., \$75. Inglewood, 755-1071. A

Swing Set, children's 5-pc., \$10. Torrance, 835-5708. A

Refrigerator, Frigidaire, 14 cu. ft., bottom freezer, \$42.50. P.V. Pen., 378-2810. A

Piano, Bradbury spinet, mahogany, bench & metronome, \$350. Inglewood, 678-0250. A

Studio Couch, makes into queen-size bed, 4 covered bolsters incl., \$50. Lawndale, 676-3050. A

Piano, Hallet & Davis, blond spinet, \$295. Hawthorne, OS 6-9667. A

Clarinet, Dumont, w/case, \$60. Harbor City, 326-8033. A

Aircraft, 1940 Porterfield, 2-place, 170 hrs. S.M.O.H., needs wing work, \$600. Simi, 805-526-7642. A

Motorcycle, 1964 Triumph, 650 cc, \$750. Inglewood, 674-1847. A

Tires, 4 5.90 x 13 Dunlop Road Speed, b/walls w/tubes, \$100. Santa Ana, 543-0435. A

MCB, 1963 roadster, low mileage, \$1,195. Hawthorne, 714-774-0410. A

Mountain Home, in Running Springs, nearly new, 2-bdrm., 1,000 sq. ft., sun porch, modern kitchen, lge. living rm., good for vacation or permanent residence, \$14,500. Wilmington, 834-4184. A

Ignition Analyzer, Heath Kit, fact. wired, 5 yrs. old, used 5 times, \$35. Torrance, 320-3667. A

Mountain Home, in Wrightwood, 5 rooms & lge. deck, fireplace, all knotty pine int., completely furn., 10% dn., buyer assumes FHA 5 3/4% loan, \$15,550. Costa Mesa, 714-546-2174. A

El Camino, 1959, new equipment, \$950. Gardena, 532-6109. A

Home, 3-bdrm. & den, patio, fenced play yard, panel. liv. rm., bkfst. bar, near schools, 2-car gar., \$22,500. Gardena, 329-2904. A

Ford Engine, 1958, 6-cyl., complete w/trans., new valve job, rod bearings & clutch, \$75. Lawndale, 371-6775. A

Sailboat, 8' Wind'ard Sabot, red metallflake fiberglass hull w/mahogany centerdb., rudder & trim, spruce mast & boom, Dacron sail, \$225. Long Bch., 423-5768, 714-897-4009. A

Patio Cover, 12' x 16' alum., complete w/screens & glass, baked enamel finish, will help to dismantle, \$600. Wilmington, 830-0751. A

House, 3-bdrm., 1 1/2 baths, lge. living rm., dining rm., kitchen, breakfast nook, lot 63 x 135, pool, 2-car gar., \$29,950. Inglewood, PL 4-7861. A

Triumph, 1966, 650 cc, TR6-SR, tachometer, \$900. Norwalk, 864-8791. A

Chrysler, 1960 Windsor, r/h, p/b, p/s, air conditioning, \$375. Hawthorne, OS 9-2610. A

Rods, 2 custom-built, 12' long, breaks into 6' secs., complete w/Roddy 928 rl. spinning reels, extra spools & monofilament, other fishing tackle avail., \$30 set. Torrance, 371-9925. A

Pontiac, Grand Prix, 1962, r/h, all power, good tires, \$1,200. Box 203. A

Volkswagen, 1957, eng. & tires good, needs trans., \$100. Hawthorne, 676-5884. A

Tubular Headers, equal length, for Mustang, many other parts, \$65. Garden Grove, 714-539-9964. A

Ford, 1965 Galaxie 500, r/h, p/s, factory air, auto., 25,000 miles, \$1,950. Long Bch., GA 3-1363. A

Plymouth, 1958 station wagon, needs battery, \$25. Inglewood, 671-3854. A

Ford, 1963 Country Squire, r/h, new brakes, \$1,150. Corona del Mar, 714-673-2002. A

Chevrolet, 1954, 1958 Chev. 6-cyl. eng., 2-dr., 14" wheels, r/h, stick shift, \$325. Gardena, 327-8711. A

For Sale

Go-Kart, bug racing-type, MC9 w/clutch, \$135. Hesperia, 334-0211. A

Engagement Ring & Wedding Band, 1 carat diamond, \$425. San Pedro, 831-4908. A

Beach Lot, 40 x 100, all improvements in & paid, in Oxnard, terms, \$7,200. Manhattan Bch., FR 4-3359. A

House, 3-bdrm., 1 1/2 bath, bltins, cpts., just painted, fenced rear yd., lease w/option to buy, \$24,000. Inglewood, 677-7660. A

Sewing Machine, Necchi, used only 3 times, \$300 value, all attachments, \$100. Lynwood, 537-1463. A

Pup, Norwegian elkhound, male, 9 wks. old, AKC reg., champion sire, \$250. Rolling Hills Ests., FR 8-4422. A

Dodge, 1955, \$125. Gardena, DA 4-6484. A

Oldsmobile, 1963 F-85 Cutlass, r/h, s/belts, floor console, \$1,325. San Pedro, 832-1886. A

House, 5 rooms, 2-bdrm., full dining rm., fireplace, cpts., dps., dbble. gar., \$20,500. Inglewood, OR 1-3860, FR 5-5097. A

Pup, Sheltie, 10 wks. old, shots, AKC reg., male, golden sable, \$75. Artesia, 213-865-3108. A

Motorcycle, 1965 Honda 150, white, \$300. Inglewood, 672-0608. A

Chest-of-Drawers, \$35. Hawthorne, 675-7965. A

Toy Poodles, AKC, \$50 & up. Inglewood, 671-8401. A

Range, Magic Chef, 30", gas, large oven, \$30. Hawthorne, 675-4984. A

Home, 3-bdrm., 1 3/4 bath, near Del Amo Shop. Center, forced air heat, paneled den, cpts., dps., lge. kitchen, bltins, drift stone fireplace, lge. cement patio, sprinklers, o/size gar., \$32,000. Torrance, DA 5-7806, 325-8430. A

Lot, lge., in Idyllwild, paved road, wooded, stream, secluded, close to village, elev. 5,500 ft., \$6,000. L.A., PL 4-5288. A

Wanted to Buy

Engine, 292 cu. in. Ford, complete, w/o/ out auto. trans., suitable for o/haul or short block exchange. Gardena, DA 4-9593. B

Case for large bore slide trombone. Culver City, VE 9-5438. B

Free (To Be Given Away)

Guppies, about 75, all ages. Inglewood, 675-0788. D

Rentals Offered

Home, 4-bdrm., 2-bath, fenced yd., cpts., dps., near schools & Disneyland, \$150 mo. Fullerton, 528-6914. E

Apt, 2-bdrms., lower, furn. & unfurn., cpts., dps., bltin stove, walk to shopping & Nor. Anaheim, \$105 & up. Fullerton, 526-3053. E

Home, 3-bdrm., 2-bath, cpts., dps., 2 patios, fenced & landscaped, bltins, dishwasher, water pd., 20 min. to Northrop Ventura, avail. approx. July 1, \$150 mo. Simi, 805-526-7767. E

Exec. Apt, 2-bdrm., 2-bath, 1,600 sq. ft., lux. features, \$200 mo. Inglewood, 670-6084. E

Apt, deluxe 2-bdrm., furn., lge. pool & patio, closed gar., near El Camino, \$140. Torrance, DA 9-5986. E

House, 2-bdrm., rear, \$110. Torrance, FR 8-0500. E

House, 2-bdrm., furn., dbble. gar., at beach, \$135 mo. Gardena, DA 4-7688. E

House, partly furn., 2-bdrm., upper Hermosa Bch., \$82.50. Redondo Bch., FR 6-7085. E

Apt, 2-bdrm., unfurn., pvt. patio, closed garage, laundry, children OK, \$125 mo. Torrance, FR 5-0867. E

Apt, 3-bdrm., 2-bath, pvt. dbble. gar., enclosed patio, forced-air heating, air cond., bltins, family rm., cpts, dps., lge. fireplace, avail. Feb. 1, \$175 lease or \$180 mo. Buena Pk., TA 8-2857. E

For Sale or Trade

Outboard Motor, Seagull Century Plus, long shaft, clutch, 5 h.p., used only 10 hrs., \$185. or trade for Seagull Forty Plus, long shaft. Garden Grove, 539-2098. M

Rides and Riders

Rides Wanted

7 a.m. — 3:45 p.m.

Rosecrans & Imperial or Valley View, La Mirada. Dolores Addington, Nor. Anaheim, ext. 396, WH 1-3013.

7:30 a.m. — 4:12 p.m.

So. Birch Ave. & 118th, Hawthorne. Genevieve Lees, Norair, ext. 4314, 676-4321.

Vicinity of Valley View & Chapman, Cypress. Ray McGraw, Norair, ext. 2324, 892-7664.

8 a.m. — 4:42 p.m.

Eagle Rock & York Blvd., Los Angeles. Ramesh C. Taneja, Norair, ext. 1006, 1007, 254-7045.

Rides Offered

7:30 a.m. — 4:12 p.m.

Vicinity of Valley View & Chapman, Cypress. Ray McGraw, Norair, ext. 2324, 892-7664.

8 a.m. — 4:42 p.m.

Crenshaw & Wilshire Blvd., Los Angeles, C. M. Spindel, Norair, ext. 2521, 2522, 465-8023.

Rentals Offered

Apt, deluxe 2-bdrm., 2 baths, cpts., dps., bltins, dishwasher, patio, closed gar., \$145 mo. Fullerton, 879-5674. E

Owner's Apt, unfurn, 3-bdrm., 2-bath, pvt. patio, closed gar., family rm., fireplace, bltins, dishwasher, near Norair, avail. Mar. 1, incl. utilities, \$225 mo. Hawthorne, 679-1358. E

Home, redecorated, unfurn., 2-bdrm., cpts., disp., gar., yard, adults preferred, no pets, \$120 mo. Torrance, DA 6-5566. E

Rentals Wanted

House, 2 or 3-bdrm., dbble. gar., Hawthorne or Inglewood area, have 3 children, need lge. yard, willing to pay \$135 mo., Hawthorne, 675-8226. F

Apt. or House, 2-bdrm., cpts., dps., accept baby, price range, \$100 - \$125. Inglewood, 672-2748. F

Child Care Wanted

Babysitting, in my home. Inglewood, 672-1952. H

Personals

Sewing lessons wanted, my home or yours, Inglewood, 671-5576. L

I wish to thank all my friends at Northrop, especially the Payroll Distribution office, for the retirement farewell card & contributions to a parting gift fund. CARL H. FELDT. L

I wish to thank all those who expressed sympathy at the loss of my dear parents. It was comforting to hear from so many friends, at such a troubled time. BARBARA AUWAERTER. L

For Sale or Trade

Outboard Motor, Seagull Century Plus, long shaft, clutch, 5 h.p., used only 10 hrs., \$185. or trade for Seagull Forty Plus, long shaft. Garden Grove, 539-2098. M

Airplane Club to Meet

Northrop's Model Airplane Club will host the International Plastic Modellers Society, February 22 at a meeting set for 7:30 p.m. at NRC Clubhouse, Hawthorne.

Plastic models of all types will be on display.

Special Showing Scheduled For 'Man For All Seasons'

"A Man For All Seasons," winner of four New York Drama Critic awards, will be shown on February 26 to an audience of Northrop personnel and their families.

Tickets are available at all divisions and facilities through Personnel Activities. Information may be obtained by contacting Blanche Cook, Norair Personnel Activities, at ext. 2486.

Only 415 loge and orchestra reserved seats are available. The showing will begin at 5 p.m. February 26 is a Sunday.

"A Man For All Seasons" is at the Beverly Hills Music Hall Theater, 9036 Wilshire Blvd. Loge seats, regularly priced at \$3.50, will be \$2.80. Orchestra seats, regularly \$3, will be \$2.40.

The New York critics' awards were for best picture, best actor (Paul Scofield), best screen play and best direction.

"The Bible," which will be shown Saturday to a full house of

Northrop personnel, also can be seen on April 22.

Personnel Activities sold out its initial showing for the picture, and then scheduled the second. The April 22 (Saturday) screening will be at 9:30 a.m. Tickets are \$1. "The Bible" is at the Beverly Theater, 206 N. Beverly Drive, Beverly Hills.

Group Schedules Lunchtime Movies

The Norair NRC Christian Fellowship will present new films for the next two weeks at lunch period showings in their "Sermons from Science" film series.

The week of February 6 will feature "Mystery of Three Clocks," while "Of Books and Sloths" will be shown the week of February 13. Showings are at various points around Norair at staggered times to cover all lunch periods.





**SPECTRAL 'SLEUTH' AT WORK**—3-D rendition of his own voice is examined by Northrop Nortronics' Robert Martell, senior engineering aide, at the division's Needham, Massachusetts department. The Spectral Contour Plotter spots tiny differences between virtually identical electronic signals—important in diagnosing heart ailments, radar returns and clandestine messages. The plotter or "sleuth" also can provide clues for earthquakes, lightning bursts, respiratory and blood flow sounds, speech defects and synthesis and language studies.

## JUNIOR ACHIEVEMENT

### Teens to Sell Safety Kits

Handy highway emergency safety kits produced by HESKO, Nortronics - counseled Junior Achievement firm, will be available to Northrop personnel in the Hawthorne area at two special sales this month.

Achievers with kits to sell will be at the main entrance to the Johnson property during luncheon periods, February 13 and at the Norair cafeteria, February 22.

The emergency kits are ideal

for use in automobiles. They contain three 15-minute emergency flares, three day-night reflectors, two accident report forms, a pencil and a dime (for emergency telephone call).

They cost \$2.

Nortronics personnel in the Hawthorne and Palos Verdes area counsel HESKO, one of three J.A. firms supported by Nortronics. Advisors are Neal McKinzie, sales; Art Johnson, management; and Ralph Brant, production.



**HIGHWAY EMERGENCY** safety kits being assembled by members of HESKO, Nortronics-counseled Junior Achievement firm, will be available to Hawthorne area employees, February 13, during lunch. Kits sell for \$2, contain items for use in emergency.

## Spectral Plotter Produced By Nortronics Needham

A product which produces permanent three-dimensional plots of the time, frequency and amplitude relationship of signals is being produced by the Needham Department of Northrop Nortronics.

Known as the ST-701 spectral contour plotter, it plots amplitude in closed contour lines (similar to a topographic map) in addition to the varying shades of gray ordinarily used by conventional plotters. Contouring provides a marked improvement in accuracy of the amplitude dimension. Either logarithmic or linear spacing of contour lines is possible.

Time and frequency are recorded as X and Y coordinates respectively.

The ST-701's ability to detect and classify signals in great detail is seen to hold promise as an investigative research tool with many different applications. At Needham, engineers have successfully extracted information from signals with the ST-701 which could not be displayed by other instruments.

Resolution of the display is twice that of a standard television picture.

Several spectral contour plotters are already being used for a variety of applications. More than 100 heart sounds, furnished by the U.S. Public Health Service, have been plotted on the ST-701. The plots have been used to investigate the diagnoses of various heart ailments. Plots show

dramatic differences between various types of abnormalities.

In addition to those medical applications, the ST-701 can also be used in:

Communications — study of clandestine modulations; spectral signatures of transmitters, radars and other emission devices.

Signal Propagation—display of radar or sonar returns; doppler shifts; absorption and reflection.

Anti-Submarine Warfare—ship quieting; spectral signatures of sonar and hydrophone signals.

Noise and Vibration—display of engine noises to detect and categorize malfunctions; the study of engine noise signatures; analysis of resonance and damping phenomenon in missiles, aircraft or any mechanical device.

Geophysics — study of earthquakes, lightning bursts, magnetic disturbances; any geophysical event which can be monitored by a transducer.

Speech—identification; speech defects; speech synthesis; speech compression; and language studies.

Acoustics — room acoustics; transmission properties of materials; analysis of sound systems.

Oceanography — flow noises; hydrophone pickups; sonar returns of the ocean bottom.

Nortronics Needham also has introduced a contractual processing service in which firms and organizations can have signals plotted and analyzed on the ST-701 by Needham personnel at the Needham Heights facility.

## WHERE GYROS CHECK GYROS

### 'Ultra-Accurate' Test Lab

(Continued from page 1)

of the system, the slightest instability in the measuring, monitoring, or recording functions will give a distorted picture of the gyro's capability. Thus, only through stability can accuracy be achieved, and we're talking here of accuracies that stagger the imagination.

"For example, rotation of the air bearing test tables used in the lab can be read and recorded to better than 0.05 seconds of arc. If you were to shoot a 22-caliber rifle from Boston to Plymouth Rock (30 miles away) and your aim was off by only 0.05 seconds of arc, you would score a hit on a quarter but would just miss a penny.

"Our search for stability started with the base structure of the lab itself, to isolate the test pads from the effects of seismic and man-made or cultural noises. The pads are supported by a 160-ton concrete base extending 17 feet to bedrock. This monolithic pad structure is isolated by a one-foot 'air-barrier' surrounded by a 160-ton concrete retaining wall. To assure constant pad temperature, air controlled to  $\pm 1^\circ\text{F}$  is circulated around and within the pad.

"Another important aspect was the stability of the actual test environments. Accurate gyros under test can sense very small changes in temperature, pressure, magnetic fields, and even air currents. Therefore, UPTC includes high precision equipment to monitor and control these external influences. For example, the temperature around a gyro in test is controlled to better than one-tenth of a degree Fahrenheit.

"Having achieved stability is

no guarantee in itself that you can maintain that stability, so an equally important part of our effort was the design and build of the items of equipment necessary for measuring and monitoring.

"A good example of this is monitoring the precise frequency standard that furnishes all input or synchronizing signals required by the test equipment AC power supplies.

"While we have met all our objectives on this original program, our work hasn't finished. For example, we recently proposed to NASA/ERC in Cambridge, Massachusetts, a system of active pad stabilization. Subsoil conditions in Cambridge are such that passive pad stabilization (a huge base structure like the one at PPD) is technically unfeasible. Our proposed system uses a combination of accurate gyros and accelerometers to isolate the pad from short-term, as well as slow motion, vibratory motions and keep it level. Comprehensive simulated studies of the proposed system yield better stability results than anything obtainable with passive stabilization.

"Another concept, under joint Navy and PPD development, is the idea of using gyros to test gyros. If you use a precision rate gyro as a rate integrating device, your readout is directly in angles and is completely disassociated from any base motion. This is not the case with more conventional transducers which all, in one way or another, tie into the base. Thus, using gyros to test gyros provides a pure inertial reference for readout.

"After all, there is no better stabilizer than a gyro!"



John R. Baraniak

## Baraniak Appointed Director

John R. Baraniak has been named director of Industrial Relations for Northrop Nortronics' Precision Products Department at Norwood, Massachusetts.

Mr. Baraniak's most recent association was with Sanders Associates, Inc. where he was a Corporate Employee Relations manager.

Previously, he held major personnel positions with Transiron Electronic Corporation, Raytheon Company, and Van Norman Industries. He also was associated with R. T. Burroughs Company as a consultant in employee benefit planning.

For the past decade he has taught labor and management courses in the Evening Division of Saint Anselm's College at Manchester, New Hampshire.

Mr. Baraniak holds a bachelor of science degree from Holy Cross College, and master of arts degree from the University of New Hampshire.

He is a member of the American Management Association, the American Society for Personnel Administration, and the American Society for Training and Development.

## McNabb Honored On 25th Year At Nortronics

Another large group of Northrop Nortronics employees assigned to California operations celebrated anniversary dates with Northrop during the month just past.

Frank McNabb observed his 25th Northrop anniversary, while Letha Peterson, George Fritz and Granville Wilson completed their 20th year of working with Northrop.

Observing 15-year milestones were John Stryker, Doris Criss, George Garner, William Perry, Ella Williams, Willard Picquelle, Charles Bowser, jr., William Newland, Richard Estes, Arnold Cervera, Pete Falk, LeRoy Johnson.

John Ramsay, Frances Modellmog, Pearley Ball, James Auest, Gordon Wilcox, Anson Cone, Paul Gonzales, Frances Orr, Ruth Forstrom, Robert Lane, Edwin Klein and Joseph Smith.



Mr. McNabb



# NORTHROP NEWS

NORTHROP NORTRONICS

Published biweekly by Northrop Corporation, Beverly Hills, California

Vol. 25, No. 3

February 15, 1967

## \$700 Million Volume Seen By 1970

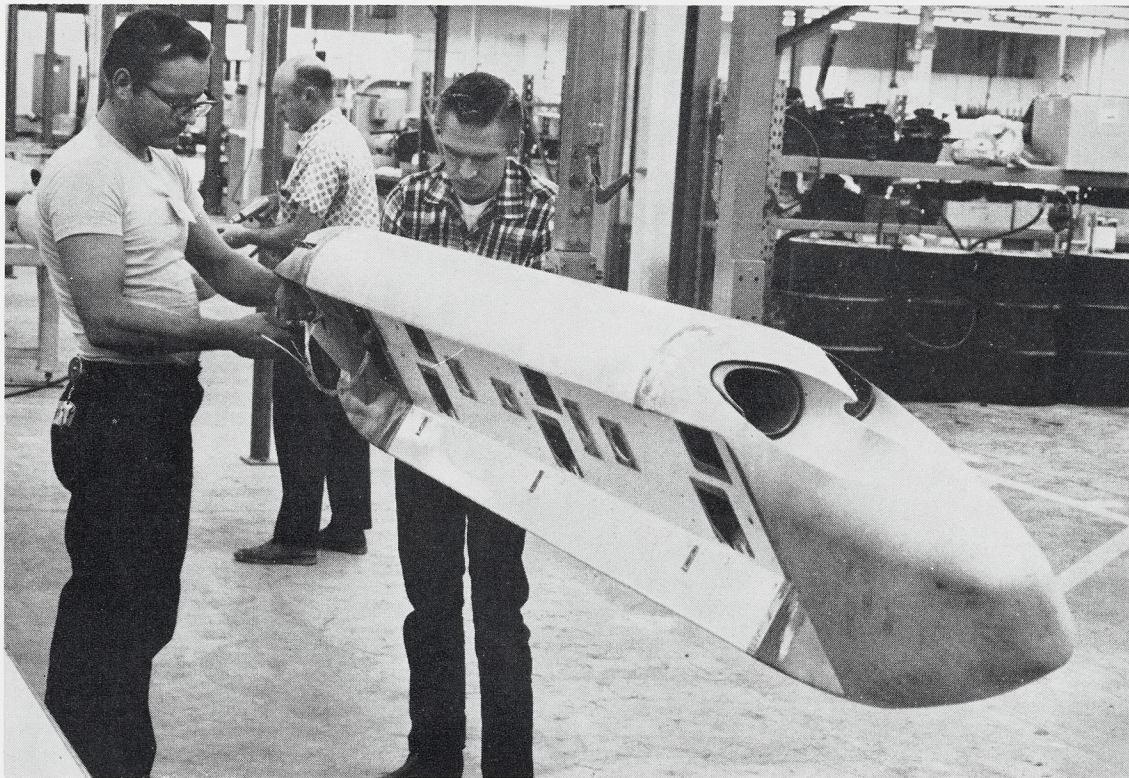
Northrop Corporation expects its 1970 business volume to reach \$700 million, almost double its 1966 sales, Thomas V. Jones, Northrop president and chairman, told the New York Society of Security Analysts this week.

Northrop sees a large portion of its increase in sales in the years immediately ahead stemming from the world-wide expansion of air transportation and communications, Mr. Jones said on Monday. He also noted that the company is stepping up its efforts to make sound acquisitions of commercial and industrial companies.

"We have a five-year objective of bringing our annual sales to a level of \$1 billion, divided about equally between government and commercial business," Mr. Jones said. "If this seems ambitious, bear in mind that even without any further corporate acquisitions, our current planning calls for an expansion of volume to at least the \$700 million level by 1970—and by that time we expect 40 percent of our total volume to be commercial."

In discussing this year's outlook, Mr. Jones said sales in fiscal 1967 should pass \$450 million, a company record for the second consecutive year. Sales in 1966 were \$360 million.

Aircraft presently comprises about 45 percent of Northrop's volume, primarily in sales of the F-5 Freedom Fighter and the T-38 supersonic trainer.



NEW SUU-20/A PRODUCTION line at Nortronics Anaheim is now in full operation turning out versatile Northrop bomb and rocket dispensers. Units provide low-cost means for improving pilot weapon system delivery and

efficiency. SUU-20/As will fit almost any type of tactical aircraft. Working on the line are (from left) Eldon Thompson, Bob Titterington and Gordon Stinnett. Production was formerly carried on at Norair Division.

## SUU-20 Line In Operation At Anaheim

A new production line for a proven Northrop product is now in full operation at Nortronics Anaheim.

The product is Northrop's versatile SUU-20/A practice bomb and rocket dispenser.

Nortronics, an experienced producer of weapon system dispensing devices, recently assumed responsibility for this product manufactured at Norair Division.

Initial production units from Anaheim were shipped recently. Two were sent to Alaska for use in cold weather tests being performed on a new tactical fighter. Other units are scheduled for the armed forces of Greece and Turkey.

Combined orders for the SUU-20/A dispenser include the possibility of subsequent contracts, in addition to the original order, for an unspecified number of units.

The SUU-20/A is a low-cost training device for use in bombing and rocketry training missions to indoctrinate pilots and increase proficiency. It will carry six practice bombs and four rockets simultaneously making possible a single practice flight in which both bombs and rockets can be launched. And it is readily adaptable to all tactical aircraft, subsonic and supersonic.

Extensive test programs have been carried out with prototype units to key Air Force and Navy testing installations.

In addition to its primary missions, the SUU-20/A can also be adapted to carry and dispense flares, marine markers, leaflets, bomblets, grenades, and anti-submarine warfare devices. Or it can double as a luggage carrier, smoke tank or a means for

(See SUU, page 6)

## Ski Club Members Head for Mammoth

Members of the NRC Ski Club will go to Mammoth Lakes this weekend on their first trip of the year.

A chartered bus will leave Gate 5 at Northrop's Hawthorne facility at 6:30 p.m. Friday, heading nonstop to the Sierra Nevada Inn at Mammoth. The skiers will return on Sunday.

Cost of the trip is \$21, including transportation and two nights at the inn.

## W. H. ARATA

### Meeting Chairman Named

W. H. Arata, jr., of Northrop Nortronics, has been appointed arrangements chairman for the Institute of Navigation's National Space Meeting, to be held March 14 and 15 at the Airport Marina Hotel in Los Angeles.

Mr. Arata, deputy director for Commercial Navigation Systems at Nortronics, said the ION meeting will attract more than 300 of the nation's top scientists and engineers.

The less glamorous—but important—non-hardware aspects of precision space flight will be examined at the national space meeting.

The conference will be devoted to the non-hardware (re-

ferred to as software) facets of space navigation, to stress the importance of software requirements on both the design and success of a navigation system.

Software includes such things as:

Computer programming, error analysis, trajectory development, simulations, program validation and steps necessary to realize the potential reliability of a navigation system.

Mr. Arata will be theme chairman for a portion of the fourth annual meeting and technical display of the American Institute of Aeronautics and Astronautics to be held at the Anaheim Convention Center, October 23 through 27.

## ANITA HULME

### 'Dexterity, Patience, Pride and Skill'

Among the artists in her field Anita Hulme is regarded as an artisan of the first order.

Her field is electronic assembly. She practices it at Nortronics Anaheim.

Anita Hulme is typical of a group of dedicated female employees who have turned what could be a routine job into a challenge. With dexterity and patience, pride and skill each works to turn out ever-better components.

This is electronic assembly, an art form in itself.

Anita modestly declines praise of her work, but those who work with her note:

"Anita has the touch. She is never satisfied with just good. Her pride makes her strive for beautiful assemblies, flawless in workmanship, perfect in operation."

Mrs. Hulme joined Nortronics in 1953. She worked first in deburring, then in detail painting. In 1955 she applied for a job in electronic assembly, an organization then forming. She was accepted.

"Anita has worked on a part of just about every electronic system produced here through the years," says Cy Seeley, chief of Electronic Production. "Her knowledge, personal integrity and skills have led us to assign her ever-increasing difficult jobs. She has handled each to perfection."

Mrs. Hulme credits her fellow craftswomen with some of her knowledge.

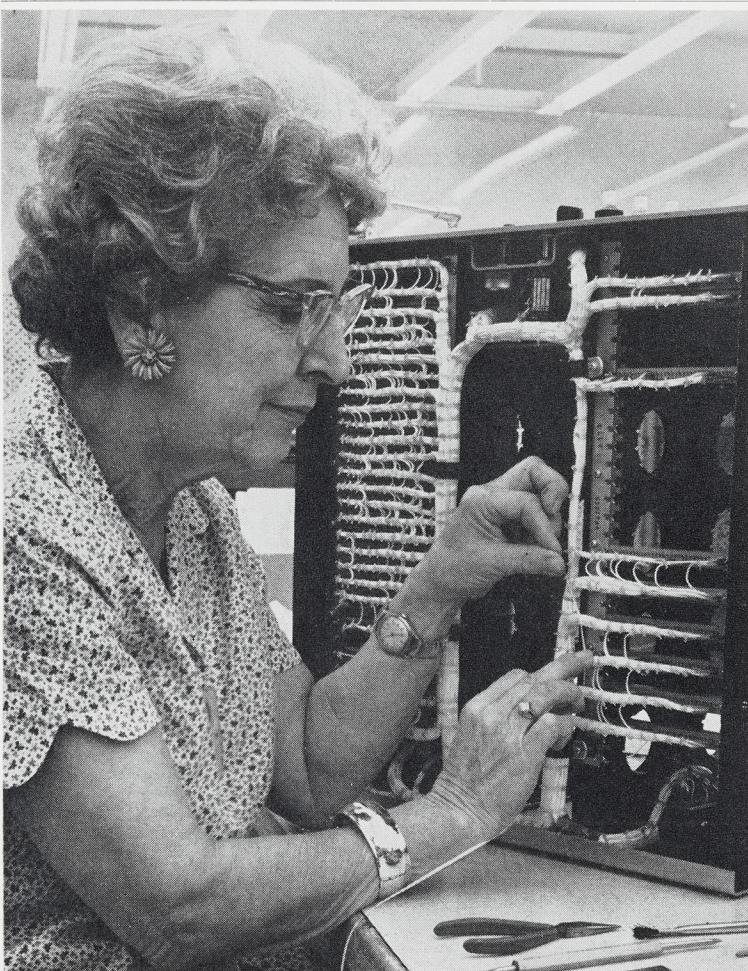
"We help one another, pass on little tricks and skills," Anita says. "When you look about you and see the beautiful work being done by others, you naturally

try to do better. It's a real challenge."

Anita Hulme likes to tackle the difficult jobs, the ones that require thought, planning and special effort.

"My husband, Henry, worked here from 1952 until his death in 1958. He was a perfectionist, a machinist without peers in turning out intricate parts for instrumentation and optical uses," Anita says. "He taught me much about the pride of accomplishment, what you can do with just your two hands, the proper tools and imagination."

A son, Richard Hulme, worked his way through college by serving as a laboratory technician at Norair. A daughter-in-law, Patricia, helped put a second son, Jerry, through the USC Dental College by working at the Norair Model shop.



ARTISAN AT WORK—Among talented Northrop Nortronics female employees who turn out beautiful and flawless electronic components is Anita Hulme. Note the art-like contours of many wires and connections in this unit. Mrs. Hulme is a veteran specialist in this field and regarded as a craftsman without peers.





**ONE MILLION HOURS**—Lieutenant General Sam Maddux, Jr., (left) and Colonel W. E. Davis, Jr., check out the controls of their Northrop-built T-38 before taking it on a flight

which marked one million hours of T-38 service. The flight was made from Randolph Air Force Base in Texas. General Maddux is commander of the Air Training Command.

## Page Communications Man Finds Romance in Vietnam

Late last year, one of our men in Vietnam fell prey—not to the deadly Viet Cong, but to a much warmer and more welcome influence—romance.

During his period of service as a communications specialist with the U.S. Air Force from 1962 to 1966, Bill Verburg spent a portion of that time in South Vietnam. Upon completion of his tour of duty, he returned to civilian activities and entered employment with the telephone company in Southern California.

His mother, Mrs. Clara Verburg, a South Bay businesswoman, said he wanted to return to Vietnam since he felt he could best serve his country and, at the same time, contribute to the assistance of the South Vietnamese by going back.

In mid-1966, Mr. Verburg joined Page Communications Engineers, Inc., a wholly-owned subsidiary of Northrop Corporation, and returned to South Vietnam as a radar technician, stationed in Danang.

Shortly after he assumed his duties, he met an attractive Vietnamese girl, Ky-Nam Nguyen thi, a secretary. The couple became engaged and made arrangements

to be married in October.

Mrs. Verburg immediately arranged to travel to South Vietnam to attend the wedding. The ceremony took place on October 28, with one of Mr. Verburg's friends at Northrop Page serving as best man.

Mrs. Verburg said she spent seven days in South Vietnam with her son and his bride. The new Mrs. Verburg now is employed as a secretary in the Northrop Page offices in Danang.



## EMPLOYEES ACTIVE

### Scouting Backers Honored

Boy Scout Troop 262, sponsored by Northrop, has been named outstanding unit in the Centinela District for 1966—but that's not even half the story.

Several Northrop employees—ranging from Assembly and Quality Control personnel to senior executive members—are active in Scouting, most of them in Troop 262.

Affiliated with the Troop are Cub Scout Pack 262, Sea Scout Ship 262 and Mariner Scout Troop 262.

On January 31, one of the most active Northrop Scouting enthusiasts was honored by the Los Angeles Area Council of the Boy Scouts of America.

Otis Teague, foreman of the Fuselage Mate and Complete group on the Norair T-38 and F-5 assembly line, was honored with the Silver Beaver Award "for distinguished service to boy-

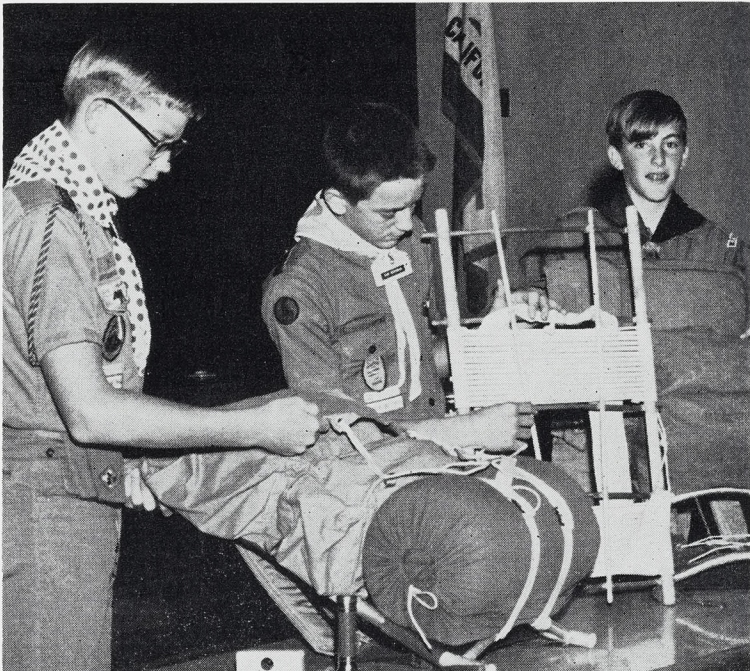
hood." It is the highest award given a volunteer by the National Council through the Los Angeles Council of the Boy Scouts of America. Since 1931, only 411 of these distinguished awards have been made to members of the Los Angeles organization.

Mr. Teague, assistant district commissioner encompassing the Hawthorne and Lawndale areas, has been associated with scouting activities since 1950. His wife also has served in scouting activities.

Serving on the executive board of officers and members-at-large of the Los Angeles Council of the Boy Scouts for 1967 are:

Richard R. Nolan, senior vice president, Manufacturing and Administration, Northrop Corporate office; and Thomas L. McCarthy, manager of Norair Administration. Mr. McCarthy also is serv-

(See SCOUTING, page 5)



**PROPER PROCEDURES** for assembling packs are presented to members of NRC-sponsored Scout Troop 262, recently selected as outstanding unit of the Centinela District. Participating in demonstration are (from left) Eagle Scout Earl McLenahan; Star Scout Eddie Workman, son of Bob Workman, Nortronics; and Life Scout David Yarbrough.

## COMPANY SEEKS 'MISSING' EX-EMPLOYEES

Leslie B. Sullivan and C. L. Yarbrough, where are you?

That's what Northrop Corporation officials are trying to find out, as the two are among 10 men—all former Northrop employees—who may be eligible for retirement or savings benefits.

Mail addressed to them has been returned, and officials are unable to contact them.

In addition to Mr. Sullivan and Mr. Yarbrough, other "missing" men are R. B. Hughes, John Rawcliffe-King, Cecil A. Ferguson, K. A. Crist, V. E. Cull, Robert C. Peterman, Dean J. Snyder and W. G. Eastwood.

Anyone with information on their whereabouts has been asked to call Corporate officials at ext. 302.

## Final Meeting Set For European Trip

A reminder of a final meeting was issued this week by the combined NRC Travel Clubs. Those interested in taking part in the summer European excursion are concerned.

The meeting will be held at 7:30 p.m. Saturday, February 25, at the NRC Clubhouse, Fullerton.

## NORAIR'S BUCK OWENS

### His Death May Bring Sight to Another

The eyes of a veteran Northrop Norair employee, Harry (Buck) Owens, who died January 22 may mean the restoration of sight for

some Southern Californian.

Mr. Owens was stricken at his home in Lancaster, and was pronounced dead upon arrival at an

Antelope Valley hospital of an apparent heart seizure.

His death set in motion arrangements that he had made to donate his eyes to the Estelle-Doheny Eye Foundation in Los Angeles for use in corneal transplant and eye restoration.

His widow, Lois, signed the necessary papers at the hospital, and two Los Angeles County sheriff's deputies rushed the eyes to the Foundation, where the transplant was made within a three and a half hour period.

Foundation authorities confirmed the eyes were used for a corneal transplant operation later that night, but declined to identify the patient benefiting from Mr. Owens' bequest of his eyes, according to Foundation rules.

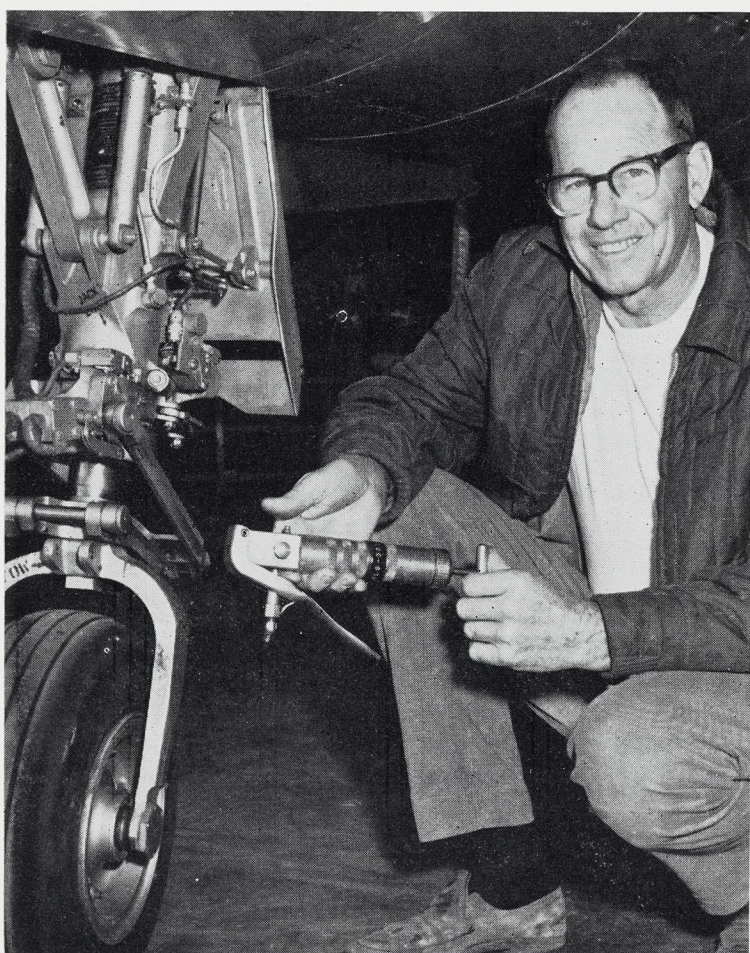
Mr. Owens joined Northrop Norair in April 1942, and had lived in the Antelope Valley since 1948. He was assigned to Norair's Edwards Air Force Base operations.

## Telephone Problems? Dial 4300 for Service

Extension 4300 is a good number to remember at Norair, according to Robert Rothstein, supervisor of the Telephone and Telegraph unit.

That's the number to call to report any difficulty with telephone equipment or service, Mr. Rothstein said.

"Many employees who have telephone trouble neglect to report it," Mr. Rothstein said.



**THAT ANOTHER MIGHT SEE**—Harry (Buck) Owens works above at Norair Edwards Air Force Base facility prior to his death. Mr. Owens willed his eyes to a foundation where a corneal transplant was made within hours of his death, all through arrangements he had made himself.



# A Reporter's View Of the War—and the Men Who Fly the F-5

Photos by the Author



MAJOR RICHARD WILLIAMS—One of the first F-5 pilots in Vietnam was Major Williams, who was part of Operation Skoshi Tiger.



ERNEST ZAUGG, author of this story, talks with a Buddhist monk in Quang Tri during Buddhist uprisings last year. Mr. Zaugg, a graduate of Harvard, has covered the war since it began. He is a free-lance reporter-photographer.



BOMB CRATERS leave trails of smoke in the Iron Triangle, the Viet Cong-infested area of Vietnam north of Saigon. By day, F-5 pilots bomb roads in the area, to stall military traffic.

At night, the Viet Cong orders peasants, at gunpoint, to rebuild the roads. Recent strikes have strengthened Allied positions in the Iron Triangle area.



AMONG THE MEMBERS of the 10th Commando Squadron are Captain Gilbert E. Dunne (left) and Captain Robert E. Kennedy. Captain Kennedy, part of the original Skoshi Tiger test group, has flown more than 200 missions against the Viet Cong.

## The F-5 in Vietnam—A Tiger Growls at the Viet Cong

**EDITOR'S NOTE —** Ernest Zaugg, author of the following story, has been in Vietnam for several years, covering the hostilities as a free-lance reporter and photographer. In Hanoi, he became one of the first journalists in the world to alert the free world to the expansionist desires of the Viet Cong.

His articles are published in the Northrop News so the men and women of Northrop will have a fuller understanding of the roles of the valiant Air Force men who fly, maintain and arm the F-5's in Vietnam.

The following is Part I of a two-part series. The next will appear in the March 1 editions of the Northrop News.

By ERNEST ZAUGG

Bien Hoa, Vietnam—There are many kinds of loyalty in a war.

Now, however, I have met with one I had never met before, at least not in this intensity.

This is the loyalty of the pilots of the 10th Fighter Commando Squadron for their plane, the Northrop-built F-5 or Freedom Fighter. Perhaps knights of old had their special horse or favorite sword which they respected in this manner.

Nor have I ever met such an optimistic and closely-knit

group of pilots. Their good morale is derived in part from their confidence and trust in their plane, so admirably suited for the kind of war they are fighting.

As an example, Major Richard Williams from Texas and Captain Robert Kennedy of South Carolina volunteered to remain another tour after the Skoshi Tiger test period in order to be with the plane.

A number of the pilots have flown all the other types of fighter jets. They express themselves in the following manner:

"In ordinary delivery, the F-5 is far more accurate than the other types due to its inherent stability. It is not plagued by yaw problems, is very responsive aerodynamically and does not mush around in the sky."

I happened in on a debriefing, in which Major Williams said:

"Well, here is an example from the mission we have just finished. There were three of us, with two 500-pound bombs each. The first bomb was so accurate on its target that the Forward Air Controller (FAC) had to look around for targets for the five bombs we had left."

Vietnam is a land of horrendous rainy seasons, with oceans of monsoon rain pouring down, fog, mists, drifting clouds and

thick, low ceilings. The Viet Cong counts on this to sneak in for a kill on outlying outposts, on convoys ambushed on the roads, or on Army units they meet in the jungle. Under such conditions, it is difficult for jets and Skyraiders to come to the rescue.

One pilot described such a situation for me:

"There was a strike at Tay Ninh Mountain, 10 miles north-east of the village of Tay Ninh. A special forces unit was pinned down there by a large force of Viet Cong, and required help. Over the target area, there was a flight of the larger jets and a flight of Freedom Fighters. There was a fairly low overcast.

"Three of the larger jets went in before us. Because they are not so maneuverable as the F-5, they had problems putting the ordnance between the army and the Viet Cong. After a few attempts, they had to leave with some of their bombs. As soon as they left, the FAC called our F-5 flight. In two or three minutes, we unloaded two bombs each. Every one was right where we wanted it. This was because the F-5 is so easy to fly, and we could keep it at a low altitude and find the spot.

"Later the FAC also told us that we were drawing heavy ground fire, but due to the

small silhouette of the F-5, we did not take a single hit."

Another pilot said:

"The FAC has always voiced high praise of the delivery and accuracy of the F-5. The implication is that our accuracy is greater. I don't mean to criticize the other planes. It is just the inherent quality of the F-5 that makes the difference."

I talked with almost all the pilots to find out the critical point of difference and superiority of the F-5. These words of one pilot about sums up what they all say:

"The problem of any air-to-ground delivery is to get to a predetermined point in space from which you can get the bomb on the target. We know the ballistics of the bomb, so that is not the problem. It is to get the plane to that point at the proper air speed, attitude and dive angle. On the dive bomb run, the big bugaboo is the roll-in. On that roll-in the F-5 responds perfectly. The other jets are much less responsive. They fight away from the roll-in, so you lose quite a bit of altitude before you can track the target. The F-5 can maneuver so quickly through the roll-in portion of the dive bomb run that you have 4 or 5 seconds to track the target, to get established on the target.

"We can get four planes on a really tight bombing pattern

and can get all the bombs on the target quickly and accurately. The pattern of the other jets is wider; there is a larger interval between deliveries. Ours is naturally a great advantage in a tough spot."

The speed of the plane is useful in this type of war, too. Often while striking a stable target the pilots get an urgent call to hit a moving target, fleeing Viet Cong sampans for example, 100 miles or so away.

Captain James Clyncke said: "Of course, for an urgent, moving target you cannot have a slow A-1 Skyraider moving along at 140 knots. You need that 400 or 500 knots of the F-5."

Other points which were brought out in my interviews which strengthen the bond of affection between pilots and plane were that the F-5 requires only a one-month course to learn to fly, whereas three months is required for other planes. Also you can turn the plane around, reload and refuel, in 20 minutes, half the time of the bigger jets, so that the 10th Fighter Commando Squadron can easily handle 30 sorties per day.

This is a good ability to have in some of the critical situations which develop here.

I would say that this plane is more than paying for its board and room in this war!





TAPING AN INTERVIEW following recent recording of a new song are singer Petula Clark; Norair's Jim Hoffman (left), the songwriter; and Ernie Freeman, the arranger. Joe

Brown, New Zealand promoter, makes the recording. Mr. Hoffman, also known as Buddy Landon, wrote the song the petite British singer recorded for an album to be released this year.

## JIM HOFFMAN-BUDDY LANDON

### Petula Clark Records Norair Man's Song

Jim Hoffman says he is as apprehensive as an "expectant father" over the pending release of a song he wrote.

But before joining Jim in his anxiety, take a look at what he's got going for him:

Petula Clark, the pixie-like British charmer who is the current international singing rage, recorded his song;

Ernie Freeman, the artist who arranged Dean Martin's all-time hit, "Everybody Loves Somebody," and subsequent hits for "Dino," Frank Sinatra and scores of others, did the arrangement;

Sonny Burke, noted tunesmith, was musical director for Warner Brothers Records where it will be released;

And this is Jim's 41st song to be released in a career that spans two decades in which he has also been a singer, producer and record company owner.

So the obvious question is: why worry?

"Worry may not be the best

word here," Jim says. "But I am anxious, extremely hopeful and expectant just as I always am when faced with this situation."

The song, incidentally, is called "I'm Holding Your Hand" and will be part of a Petula Clark album to be released later this year.

At Northrop Norair, Jim Hoffman is a senior mechanical facilities engineer. In the world of music he's Buddy Landon.

Buddy Landon entered the music world more-or-less as a hobby in 1946. He became a singer, songwriter, producer and record company owner in orderly steps, while continuing to hold regular jobs his degree in mining engineering helped him earn.

Buddy Landon has appeared in and around Chicago, New York, Los Angeles and more points in between than he cares to remember.

He has concentrated on "Country" music with an occasional fling into the popular field, and explains:

"Throughout the world there is a trend to move back to the basic things, things that are common to us all," Jim says. "And as we become less and less sophisticated, country music exerts a greater influence."

Buddy Landon wrote and then recorded a little tune called "Foxy" back in 1955. It has been his best seller, along with a song he wrote for Barry Young called "I Still Need You." It became a part of the late Mr. Young's only album, "One Has My Name" on Dot Records. Both tunes sold more than 125,000 each.

After serving as producer and manager for Barry Young's first national hit "One Has My Name," Buddy Landon assumed similar duties for the LeGarde Twins, a popular recording duo today.

Many individuals have asked Jim Hoffman why he does not elect to concentrate his many talents on a single career.

"My job with Northrop is both interesting and rewarding," Jim says. "It provides me and my four youngsters with the necessities of life."

"But I feel strongly that each individual should have some sort of creative outlet, a special identity. I find mine in music as Buddy Landon," he adds.

### General Harris Retires; Was PACAF Chief

General Hunter Harris, commander-in-chief of the Pacific Air Forces (PACAF), retired this month from active duty after nearly 35 years of service.

General Harris, who has more than 10,000 flying hours as a command pilot, has flown most of the Air Force's latest aircraft, including the Northrop-built F-5.

He was born in Texas in 1909, was graduated from the U.S. Military Academy in 1932, and became PACAF commander-in-chief in 1964, serving at Hickam Air Force Base, Hawaii.



Mr. Plummer



Mr. Harnett

Mr. Harnett will participate in a mock negotiation as a member of a moderating panel, headed by Brigadier General Arthur E. Exon, USAF director of the western region of the Defense Contract Administration Service.

Mr. Plummer will participate in the mock negotiations as a

member of a subcontractor team, headed by Allan A. Kaufmann, vice president of Contracts at Litton Industries.

The conference will use as its foundation a mock negotiation patterned from the modification of a case based on actual experience of defense agencies and contractors.

"The relationship between prime and subcontractors has become a major factor in government contracting," an NCMA official said, "and is receiving close scrutiny by industry and government leaders in this era of intense competition."

James E. Cravens, principal staff specialist in Incentive Contract Policy for the National Aeronautics and Space Administration's Washington office, will be speaker at a luncheon during the meeting.

## HAZARDS IN SPACE

### Satellite to Test Radiation

Northrop Corporation is manufacturing an instrument package for the Air Force OVI-12 biosatellite which will seek data on radiation hazards for crews on future space programs.

The OVI-12 biosatellite, called the "Flare Activated Radiological Observatory," is a joint effort of the Air Force Office of Aerospace Research and the Air Force Weapons Laboratory.

It will be orbited sometime this spring from Vandenberg Air Force Base, with a sister satellite, both atop an Atlas booster.

The satellite experiment will conduct biologically significant measurement of space radiation environment at an altitude of 250 to 350 nautical miles above the earth.

The firing could initiate a series of launches, so that scientists may better monitor solar radiation during the next period of maximum solar flare activity.

Additional objectives of the satellite include the providing of on-the-scene data to further define experimental methods and limits for the manned space system program, and to adequately define the biological hazards which will be encountered during a solar flare.

Solar flares are eruptions from the surface of the sun which, along with other effects, increase harmful proton radiation in space.

In its final form, the new satellite series will be inactive until

activated by solar flares. Then it will begin data transmission. When solar eruptions decrease, the satellite will return to its inactive state.

This payload is the second Northrop instrument package designed to investigate radiation hazards in space. The first was orbited in October 1965, aboard the OVI-2, and is still radioing data.

As a contractor to the Air Force Weapons Laboratory, Northrop is responsible for about 70 percent of the experiments in the OVI-12 payload.

### Fishermen Elect Officers, Plan Monthly Trips

Northrop Sea Anglers held their annual awards meeting and election recently and set in motion plans for activities for the coming year.

Bill MacCorkell of Nortronics and George Title of Norair were elected NRC commissioners.

Fisherman of the year honor went to Charles Fuller; Fisherette of the year was won by Mary Echlund; and the Children's trophy went to Charles Fuller, jr.

Trophies for the largest species were won by Mr. Fuller, Ed Muelberger, Bill Newman, John Simon and Ralph Muise. Mr. Simon also received the Southwest Anglers Association trophy for the largest bonita of the year, a 15-pound, 9-ounce beauty.

Plans include a monthly fishing derby, charter boat trips and a possible campout at Catalina Island. Final arrangements will be completed at a March 21 meeting.

### Discount Tickets Available for Film

Final call for tickets to an all-Northrop film showing of the popular "A Man For All Seasons" production was sounded this week by NRC.

The Northrop theatre party will be at 5 p.m., February 26 at the Beverly Hills Music Hall Theatre. Regular \$3.50 loge and \$3 orchestra seats are available through NRC for \$2.80 and \$2.40, respectively.



THE GENERAL AND THE F-5—General Hunter Harris, commander-in-chief of the Pacific Air Forces, retired from active duty this month. As a command pilot with more than 10,000 flying hours, he flew most of the Air Force's latest aircraft. Here he returns from a flight in the Northrop-built F-5.



# Classified

Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private business are not accepted. The Northrop News reserves the right to edit or omit ads. Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 64. Ads are limited to one item. Deadline is noon Wednesday, one week before publication.

## For Sale

**Hi-Fi Set**, tuner, preamplifier & amplifier, \$35. Torrance, 371-8395. A

**Baby Crib**, w/mattress, \$20. Hawthorne, 675-7646. A

**Sand Buggy**, 1955 Plymouth, cut down frame, tow bar, V-8, \$90. Fullerton, 525-2498. A

**Honda**, 1965, 305 Super Hawk w/scrambler bar & 2 helmets, low mileage, \$500. Torrance, 326-6195. A

**Bicycle**, girl's full size, balloon tires, \$5. P. V. Pen, 377-3806. A

**Pickup**, 1965 Ford V-8, less than 20,000 miles, new tires, o/load springs, \$1,500. North Edwards, 769-4753. A

**Monitor Radio**, Motorola 14V single channel, 30-50 mc, FM receiver, converted to 115 vac, \$40. L.A., 645-8004. A

**Cabin Cruiser**, 18' Fleetcraft, 75 h.p. Sears Scott-McCulloch o/board, zero hours since o/haul, running lights, full C.G. approved equip., bait tank & pump, \$1,700. Garden Grove, 213-596-9046. A

**Wedding Dress**, traditional princess style Kayhill Gown, white silk taffeta w/train & applique around neckline, 3 petticoats, size 8, \$50. Rolling Hills, 831-9707. A

**Corvair Monza**, 1961, \$475. Huntington Bch., 714-962-3192. A

**Chevrolet**, 1956 2-dr., V-8, 265 h.p., radio, runs good, \$50. Hawthorne, 676-9993. A

**Wig**, blonde, never used, \$38. Marina del Rey, 823-2655. A

**MG**, 4-dr. sedan, model 1100, 1967, \$2,200. Hawthorne, PL 8-4945. A

**Movie Camera**, 8 mm Brownie Kodak w/case, \$12. Manhattan Bch., FR 4-8036. A

**Chevrolet**, 1965 Impala SS, fac. air, r/h, w/rear speaker, \$2,000. Lakewood, HA 5-0229. A

**Dinette Set**, lime oak, 6 chairs, \$50. Gardena, 323-3675. A

**Motor**, Evinrude, 3 h.p., Yachtwin, long shaft, \$125. Garden Grove, 714-892-7440. A

**Wheelchair**, \$75; walker, \$35 or both for \$100. Hawthorne, 679-2330. A

**Home**, ocean view, 2,273 sq. ft., 2-car gar., 5 bdrms., P.V. stone walls, planters, fireplace, lge. patio, fruit trees, 3 mins. to Nortronics, lease w/option, \$350 mo., or \$52,000. P. V. Pen., 377-5319. A

**Sailboat**, 14' Omega class sloop, North sails, all equipment needed for racing, trailer, \$650. Inglewood, 376-3624. A

**Oldsmobile**, 1959 Dynamic, new paint, \$450. Inglewood, 679-9891. A

**Austin Healey**, 1960 Sprite, new paint, top, tonneau, battery & tires, \$400. Hawthorne, 676-5104. A

**Fiat 600**, 1958, \$150. Gardena, 323-7933. A

**Engine**, 1957 Ford, 8, 292 cu. in., 90,000 miles, \$25. Torrance, 370-2876. A

**Surfboard**, Jacobs, 9' 0", \$35. Redondo Bch., FR 2-3827. A

**Yamaha**, 1963 YD3, 250 c.c., 4-spd., bags & shield, \$325. Hawthorne, 371-6418. A

**Sabot**, 8' Steve Wilson, used 9 times, red mahogany trim, \$235. P.V., 325-3853. A

**Corvette**, 1962, h/top, fuel injection, 360 h.p., r/h, w/s/w, chrome wheels, \$2,050. Hawthorne, 644-3335. A

**Radio-Phonograph**, 1934 Philco, newer 4-spd. record changer, \$25. Inglewood, 672-3802. A

**Bicycle**, girl's 26", \$10. Torrance, DA 3-8797. A

**Ski Pants**, man's imported Bogner, size 28, cost \$54.; \$25. Manhattan Bch., 545-6250. A

**Stove**, O'Keefe & Merritt, 1963, chrome top, 4-burner, center griddle, temp. control burner, \$100. Redondo Bch., 379-3609, 675-9527. A

**Transceiver**, Olson Side Bander Citizens band, Super Mag antenna, 23-channel, \$100. Redondo Bch., 370-0651. A

**Surfboard**, Greg Noll cat, 9' 6", sells for \$175.; \$100. Inglewood, 534-1676. A

**Box Trailer**, 2-wheel, 4' x 8', \$50. P.V. Pen., FR 7-5303. A

**Guitar**, Kawai elec., & Knox amplifier, \$75. Hawthorne, 676-2661. A

**Plymouth**, 1952 4-dr., \$65. Hawthorne, OS 9-6219. A

**Plymouth**, 1962 Fury, 2-dr. h/top, new tires & brakes, good paint, \$850. Inglewood, 320-0618 before 3 p.m. A

**Rifle**, 22, J. C. Higgins, 17-round semi-automatic, cleaning kit & case, \$25. Hawthorne, 675-0229. A

**Radio**, Hallicrafter short wave, 4-band, model S-38, \$35. L.A., 776-1928. A

**Mercedes**, 1965 diesel, 190D, 4-dr. sedan, orig. owner, pwr-disc brakes, 34,000 miles, \$2,500. Box 301. A

**Washing Machine**, G.E. automatic, \$22.50. Long Bch., 596-1280. A

**Camper**, Pullman, complete w/1965 Chevrolet pickup, fully equipped, \$1,995. Lakewood, 867-0593. A

## For Sale

**Refrigerator**, Kelvinator, crosstop freezer, \$50. Inglewood, 672-5798. A

**Encyclopedia**, 1952 World Book, 19 vols. plus year books from 1953 to 1966, \$70. Fullerton, LA 6-6759. A

**Mustang**, 1965, V-8, radio, 4-spd., positrac., rallye pac, handling pac., \$1,900. L.A., PL 5-4055. A

**Honda**, 1964 Scrambler 300, \$400. Gardena, DA 4-0649. A

**Volvo**, 1958, \$150. Gardena, DA 3-9932. A

**Signal Shifter**, Meissner w/manual, \$25. Culver City, VE 9-5438. A

**Chrysler**, 1955 Windsor 4-dr. sedan, r/h, p/s, \$250. Torrance, DA 3-8531. A

**Auto Part**, complete Olds. 3-2 setup & manifold for 1957 & '58, \$25. Hawthorne, 679-4237. A

**Houses**, 3 2-bdrm., \$210 income plus owner's, \$4,000 dn., \$225 mo., \$31,000. Lawndale, 378-0500. A

**Doors**, 4 30" & 32", \$15. Manhattan Bch., 376-4787. A

**Boat**, 15' Chris-Craft, 35 h.p. full elec. Evinrude, trailer, canvas cover, many extras, \$595. Gardena, 327-9635. A

**Sound System**, portable, hi-fi amplifier & speaker comb. for home use or small band, \$39. So. Pasadena, 799-9476. A

**Shorthand Records**, dictation, Disc, 100-160 wpm, 4, never used, \$5.75. Redondo Bch., 370-9795. A

**Apt.**, 4-unit, near Fullerton State College, \$62,500. Buena Pk., TA 8-2857. A

**Parachutes**, for student skydivers, \$30 ea. Simi, 805-526-7642. A

**Ford**, 1957 2-dr. h/top, auto. good body & tires, \$175. Inglewood, 755-1071. A

**Ski Rack**, snow chains for VW sedan, station wagon, or fastback, \$8 ea. Inglewood, 673-1589. A

**Hi-Chair**, Cosco, blue plastic covered seat & back, chrome tray & legs, \$7. Rolling Hills Ets., FR 5-9689. A

**Stove**, gas, white, \$25. L.A., 939-3264. A

**Spanish Guitar**, Gibson classical, case & music, orig. cost, \$150; \$100. Inglewood, 671-5576. A

**Stereo Equip.**, Harman Kardon, FA 3000-X series, 30 watt amp. w/FM-MPX, \$50. L.A., 732-4986. A

**Dressing Table**, infant's, w/4 wicker baskets, \$5. Wilmington, 835-3869. A

**Shock Absorbers**, Monroe, hvy. duty, front end pr., fits 1958-'62 Chevrolet, Serial 6003-C1C4, \$22. La Crescenta, 248-1397. A

**Buick**, 1954 Roadmaster, all power, auto. trans., new tires, \$325. Tustin, 714-838-2509. A

**Coffee Table**, marble, white, solid walnut frame, \$110. Orange, 714-633-4378. A

**House**, 4-bdrm. & fam. rm., 1 1/2 bath, bltin stove, disp. paneled & brick fireplace, cpts., f.a. heat, lge. patio, dble. attach. gar., landscaped, fenced, \$4,500 dn., \$32,500. Torrance, 379-9114. A

**Triumph**, 1965 TR4, r/h, \$500 and take over \$74 mo. pymts., \$1,600 approx. bal. Buena Pk., 714-539-1962. A

**Dynakit**, stereo preamp, model PAS-3, \$40, FM tuner, model FM-1, \$30 or \$60. Garden Grove, 714-598-2253. A

**Crib**, blonde Babyline w/new mattress, \$10. Long Bch., 596-9748. A

**House**, 3-bdrm., bath & half, fireplace, pool, close to Norair, \$32,000. Hawthorne, 676-0935. A

**Ski Boots**, dble. boot, size 6, fit average 12 yr. old, cost \$20, used 4 times, \$6. Torrance, 328-6662. A

**Home**, 4-bdrm., family rm., 2-bath, fireplace, 2-car gar., 5 1/2% loan, 3 yrs. old, \$38,900. P.V., 377-5172. A

**Radio Transmitter**, amateur, Heath Kit DX 100, \$55. Hawthorne, OS 6-6949. A

**Surfboard**, Gregg Noll, 9' 6", \$65. Hawthorne, 675-2761. A

**Bedroom Set**, ortho. mattress & box spring, h/board, dresser, night stand, bed frame, \$65. Anaheim, 774-2779. A

**Pup**, Sheltie, 10 wks. old, AKC reg., shots, golden mahogany shading, female, \$100. Artesia, 213-865-3108. A

**Mini-Bike**, Rupp deluxe Continental, \$125. Hesperia, 213-334-0211. A

**Wheels**, wide, steel, 7" x 15" w/Goodyear 6.40-15 recappable tires, \$15 ea. Garden Grove, 714-539-9964. A

**Tuner**, Harmon Kardon, FM-AM, 6 yrs. old, \$35. Torrance, 320-3667. A

**Dining Table**, maple, w/4 chairs, \$35. Hawthorne, 679-7544. A

**Battery**, 12 volt Delco, 6 mos. old, 36 mo. guarantee, \$10. L.A., GR 4-7895. A

**Desk**, walnut, 7-drwr. w/chair, \$25. Torrance, 325-4869. A

**Poodle**, AKC reg., black & silver female, 3 yrs. old, \$50. Garden Grove, 537-1120. A

**Pickup**, 1941 Chevrolet, new paint, 1/2-ton, \$295. Torrance, FR 0-5347. A

**Stereo Equipment**, Garrard changer, Pilot 40-watt amplifier, 15" Roger Charles woofer, many extras, \$125. Torrance, DA 5-7705. A

**Boat**, 14', wood w/fiberglass cover, motor, steering controls, gas tank, lge. wheel trailer, \$225. Simi, 805-526-7767. A

**Boat**, 18' custom fiberglass, S.K. hull, mahogany decks, \$1,050. Fullerton, 337-1540. A

**Transmission** for 1916 Chevrolet, \$50. Torrance, 834-9771. A

**Thunderbird**, 1959, new upholstery, cpts. & brakes, recent o/haul, \$600. Hawthorne, 679-5375. A

## For Sale

**Couch**, den-type Danish modern, loose cushion, red, cost \$160; \$40. Huntington Bch., 714-962-2045. A

**Tool Box**, Kennedy, w/tools, 3 o/side micrometers, depth micrometer, sine bar, 3 indicators, various other tools, \$250. Inglewood, OR 2-7164. A

**Washer & Dryer**, Speed Queen, \$150. Torrance, 328-3963. A

**Ski Boat**, 14' Glastron, 75 h.p. Evinrude, trailer, \$700. Torrance, 328-6727. A

**Tires**, 4 Firestone w/walls, 6.95x14, \$7.50 ea. or \$25. Sherman Oaks, ST 8-9709. A

**Oldsmobile 88**, 1958 4-dr. h/top, auto., new tires, uphol. & trans. p/s, p/b, fact. air cond., \$350. Lawndale, OS 5-3557. A

**Ford**, 1930 coupe, \$250. Redondo Bch., 372-7860. A

**Corvette**, 1962, 327-340 h.p., positraction, 4-spd., \$1,800. Hermosa Bch., 322-2544. A

**Dryer**, auto., \$50. Gardena, 327-4267. A

**Ambassador**, 1961, 9-pass. custom station wagon w/A/C auto. trans., p/s, p/b, EZ-Lift trailer hitch, Goodyear dble. Eagle tires, \$650. Santa Ana, 714-544-7349. A

**Chevrolet**, 1956 Bel Air, 2-dr., r/h, w/s/w, nearly new tires, V-8, auto. trans., \$150. Inglewood, 673-3725. A

**Freezer**, 18 cu. ft. upright, \$75. Inglewood, 835-9238. A

**Jeep**, 1951 4 wheel drive, 1/2-ton pickup rebilt. eng., many extras, \$650. Torrance, 323-8249. A

**Chevy II**, 1963 Nova S.S., 2-dr. h/top, r/h, b/seats, floor console, 20,800 act. miles, \$1,150. Inglewood, 645-2571. A

**Slide Rules**, Post Log-Log Decitrig, 12" w/case & magnifier & 6" w/case, \$25 or sell separately. Manhattan Bch., 379-3487. A

**Pickup**, 1964 1/2-ton Chevrolet, many extras, \$1,550. Torrance, FA 8-2159. A

**Runabout**, 16', 75 h.p. Scott outboard & trailer, \$1,000. Hawthorne, 644-2112. A

**Tape Recorder**, 1966 portable Arvin 4-track stereo, paid \$200; \$125. Lawndale, 371-5480. A

**Tent Trailer**, 1965 Trade Winds, sleeps 6, foam cushions & mattresses, alum. screen dr., 104 sq. ft., spare wheel, water carriers, \$695. Santa Monica, 385-3383. A

**Thunderbird**, 1961, full power inc. factory air cond., \$995. Inglewood, 677-7430. A

**Merchandise Credit**, for radio equipment, \$450 value, at Olson Electronics store, all or increments of \$100; \$400. Hawthorne, 676-2076. A

**Corvette**, 1962, 340 h.p., 4-spd., positraction, 2 tops, Michelin tires, mag-style wheels, \$2,100. Lakewood, 634-8632. A

**House**, 4-bdrm., family rm., 2-1/2 baths, 1 acre, horses OK, near Northrop Ventura, \$35,000. Somis, 805-482-1186. A

**Chrysler**, 1962 300 2-dr. h/top, leather b/seats, p/s, p/b, r/h, low mileage, orig. owner, \$1,265. Woodland Hills, 347-5940. A

**Mangle**, Thor rotary speed, \$15. P.V., FR 7-4317. A

**Chrysler**, 1957 Saratoga, \$125. Lakewood, TO 6-2730. A

**Honda**, 1966 S-90, \$300. Lynwood, 631-0858. A

**Sailboat**, Cal 20 #121, full equipment, Dacrons, Evinrude outboard, \$3,000. Torrance, 371-8655. A

**Chevrolet**, 1965 Impala S.S., 327 V-8, auto., p/s, p/w, fact. air, new tires & brakes, \$2,150. Torrance, DA 3-7544. A

**Ford**, 1956 convt., p/s, r/h, new tires, needs eng. work, \$135. Granada Hills, 363-1378. A

**Riviera**, 1965, air conditioning, full power, AM/FM, 17,000 miles, \$3,100. El Segundo, 322-3352. A

**Engine**, Ford, 1958, 6-cyl., complete w/trans., new valve job, rod bearings & clutch, \$75. Lawndale, 371-6775. A

**Skis**, men's, metal, Hart, 6' 11", \$60. Inglewood, 673-1133. A

**Pontiac**, 1956 station wagon, trans. rebuilt, 2 new tires, fuel pump & battery, \$200. Simi, 805-526-8927. A

**House**, 3-bdrm. & beam-ceiling den, 9 min. to Norair, 80% or 90% loan, decorator liv. rm., bkfst. bar, \$22,500. Gardena, 329-2904. A

**Engine**, 1962 Chevy II, 6-cyl., 4,000 orig. miles, incl. bell housing, flywheel, clutch & starter motor, \$150. Redondo Bch., 370-7130. A

**Adding Machine**, Burroughs, full key-hand operated, \$25. Inglewood, 678-3318. A

**Dresser**, maple; pr. twin maple headboard beds & 1 set of springs & mattress, \$80 or sell separately. Hawthorne, OS 5-6206. A

**Mobile Home**, Roll-Away, 20' x 55', deluxe dble. lge. awnings, 6 mos. old, \$13,000. Redondo Bch., 372-0129. A

**Ford**, 1963 Ranchero, deluxe, 4-spd. trans., 14" wheels, trailer hitch, extras, \$775. Torrance, 378-4959. A

**Beach Lot**, Oxnard Shores, 40 x 100, all improvements in & paid, terms, 6 1/2% interest, \$7,200. Manhattan Bch., FR 4-3359. A

**Rambler**, 1962 American, 2-dr., 6-cyl., new tires, \$500. Gardena, 324-7841. A

**Jaguar**, 1965 XKE, 4.2 coupe, low mileage, \$4,195. Van Nuys, 789-5791. A

**House**, 3 baths, 3-bdrm., large rumpus rm., 2400 sq. ft. on 1/2 acre lot, 4 yrs. old, located in La Habra, low down payment if buyer qualifies, Norair Credit Union, Ext. 1117. A

**Range**, Gaffers-Sattler, \$40. Inglewood, 545-1657. A

**Volkswagen**, 1965, r/h, deluxe vinyl interior, \$1,250. Woodland Hills, 213-348-5783. A

## For Sale

**Camping Trailer**, 15', sleeps 6, dble. bed, convt. breakfast nook, 2 extra cots, 3-burner butane range, icebox, equipped for elec. hook up, elec. brakes, \$400. San Pedro, 833-2676. A

**House**, near Northrop, 3-bdrm., 1 1/2 bath, cpts., dps., newly decorated, heated pool, dble. gar., \$29,950. Inglewood, PL 4-0351. A

**Ford**, 1965 Galaxie 500 tudor, r/h, p/s, factory air, 25,000 miles, \$1,925. Long Bch., GA 3-1363. A

**Dodge 880**, station wagon, 9-pass., 361 cu. in. eng., fact. air cond., heater, p/s, p/seat, spec. p/b, auto. trans., undercoat o/size tires, 1-owner, \$1,475. Hawthorne, OS 9-7515. A

**Honda**, 1966 305 Super Hawk, \$600. Wilmington, 379-0038. A

**Stereo Hi-Fi**, twin speaker, Westinghouse portable, w/roll-away stand & record holder, \$50. Inglewood, 672-2748. A

**Wanted to Buy**

**Chain Hoist**, 1/2-ton. Redondo Bch., FR 4-2915. B

**Drafting Machine**. Temple City, 213-286-3572. B

**Convertible Top**, for 1955 T-Bird. Long Bch., 425-9781. B

**Couch**, 6 or 7 ft. long, Naugahyde-type surface. L.A. 391-8758. B

**Aquariums**, second hand, various sizes, slight damage acceptable. Hawthorne, 675-6978. B

**Camper Shell** to fit 1/2-ton Ford pickup, 5' x 8' bed, prefer full panel & door in rear w/out use of tailgate. Gardena, DA 4-9593. B

**Chevrolet**, Impala, late model, from private party. Inglewood, OR 4-0870. B

**Generator Unit**, tiny tiger. Rolling Hills, FR 7-3487. B

**Tonneau Cover**, for 1954 through '57 Corvete. Hawthorne, 772-1085. B

**Station Wagon**, Ford or Mercury, 1964, '65 or '66, w/air conditioning. Torrance, 324-2992. B

**For Trade**

**House**, 2-bdrm., 3 blocks to Norair, consider trading \$10,000 equity for free & clear 12' wide mobile home. Hawthorne, 769-6982. C

**Home**, 4-bdrm., custom-built in Tucson, centrally located on 1 acre, citrus trees, trade for property in this area, Prefer 3- or 4-bdrm. home on P.V. Peninsula. Hawthorne, 644-1459. C

**Mercury Monterey**, 1962 4-dr. h/top, r/h, trade for late model pickup or camper. Inglewood, 672-8521. C

**Free (To Be Given Away)**

**Dog**, white, male, loves children, good watchdog, 2 yrs. old, part poodle. Hawthorne, 679-1030. D

**Rentals Offered**

**House**, 2-bdrm., bltin range & oven, disp., cpts., dps., water, trash & gardener pd., 2 children OK, \$135. Hawthorne, 327-1131. E

**Room**, female between 21 and 33 yrs. old preferred, references, \$50 mo. Redondo Bch., 374-8534. E

**Apt.**, 2 bdrm., 2-bath, stove, disp., 1 gar., 4 miles to Nor. Anaheim, \$145. extra gar., \$5. Anaheim, 772-4103. E

**Exec. Apt.**, 2-bdrm., 2-bath, 1,600 sq. ft., lux. features, \$200 mo. Inglewood, 670-6084. E

**Apt.**, 2-bdrm., 2-bath, unfurn., dishwasher, air cond., pvt. balcony, sub. gar., fenced yd., \$160 mo. Inglewood, FR 5-0867. E

**House**, 2-bdrm., rumpus rm. w/b-bq pit, \$135 mo. Gardena, 327-2339. E

**Cabin**, Big Bear Lake, sleeps 7 to 9, \$21 w/end; \$58 wk. Bellflower, TO 7-0662. E

**Apt.**, 2-bdrm., cpts., dps., bltins, disp., closed gar., 5 mins. to Nortronics P.V., \$130 unfurn.; \$145 furn. Torrance, 375-2091, 375-9397. E

**House**, 2-bdrm., cpts., gar., disp., fenced yd., 1 mile to Northrop, \$145 mo. Harbor City, 325-5705. E

**Apt.**, 1-bdrm., unfurn., with or w/out stove & refrig., gar., 2 miles from Norair, \$90. Inglewood, 674-0755. E

**House**, 2-bdrm., furn., adults, no pets, \$97.50 mo. Burbank, 848-7790. E

**Apt.**, deluxe 2-bdrm., furn., lge. pool & patio, closed gar., near El Camino, \$140. Torrance, DA 9-5986. E

**Apt.**, 3-bdrm., 2-bath, 3 blocks from King Harbor, cpts., dps., bltins, piped music, bltin vacuum, gar. storage, \$155. Redondo Bch., FR 6-9608. E

**House**, 1-bdrm., furn., yd., gar., 1 1/2 mile from Norair, \$95. Inglewood, 676-8833. E

**Rentals Wanted**

**Garage for Boat Storage**. Inglewood area. Inglewood, OR 4-5503. F

**Child Care Offered**

**My Home**, 1 or 2 children, night shift 8 p.m. to 8 a.m., licensed. Redondo Bch., 376-6781. G

**Babysitting**, your home from 3 p.m. to 1 a.m., have references. L.A., PL 4-1969. G

**Personals**

**Dog Wanted**, free, medium or large breed, male. Torrance, TE 4-0309. L

**For Sale or Trade**

**Acreeage**, 5-acre bldg. site near Rosamond, \$3,450 or trade \$1,000 equity for car, bal. payable \$30 mo. incl. 6% interest. Torrance, FR 8-1026. M

## Rides and Riders

### Rides Wanted

7:30 a.m. — 4:12 p.m.

**Hawthorne & Lennox**, Inglewood. Pat de Pastors, Mariposa, ext. 4071, 671-5576.

7:30 a.m. — 4:15 p.m.

**Harding & Atlantic** or South & Atlantic, Long Beach. Robert Burner, Norair, ext. 2042, GA 2-5152.

8 a.m.—4:45 p.m.

**Vanowen & Platt** or Fallbrook, Canoga Park. Stanley J. Ehlinger, Nortronics Haw., exts. 462-3, DI 8-3289.

**Califa & Platt Ave.**, Woodland Hills. W. J. Palmer, Norair, ext. 1074, 347-5940.

**Ventura Blvd.** & Topanga Canyon, Thousand Oaks. Need 1 more person for 4-man car-pool. Hugh M. Cameron, Norair, ext. 1518, 805-495-9984.

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### For Sale or Trade

**Corvette**, 1957, both tops, tonneau cover, 4-spd., dual quads, \$1,500 or consider Corvair Spyder convt. in trade plus cash. Torrance, 835-5052. M

**Diving Gear**, US divers' 2-stage reg. sports-ways dual tank on rack, extra tank w/superior valve, back pack, face plate, \$125 or trade for good late model outboard motor. P. Bend, FR 5-4826. M

**Scuba Gear**, complete, never been in salt water, \$200 & 12-ga. Winchester shotgun, full choke, \$85 or trade for motorcycle. Huntington Bch., 842-5281. M

**Int. Scout**, 4 x 4, 1962, full top, extra seat, 2 gas tanks, heater, trailer hitch w/boat, Gaspar Lido, 35 h.p. motor, full cover, 2 gas tanks, C.G. equip., tilt trailer, \$1,935 or trade for Ford Van or pickup of same value. Redondo Bch., 376-2117. M

## SCOUTING

(Continued from page 2)

ing as a delegate to the National Council.

Richard E. Horner, senior vice president - Technical, Northrop Corporate office, and Richard B. Pryor, supervisor, Norair Personnel Activities, have been elected to the Centinela District of the L.A. Council.

George Larsen, senior research engineer of Norair Manufacturing Research and Development, is NRC Scout commissioner, a post he has held for the past two years. An employee of Northrop for 27 years, Mr. Larsen has been active in scout work for 15 years, and has three sons in Scouting:

Andy, 12, is second class scout; Bryan, 13, is a star scout; and Dan, 22, is first mate of the Northrop-sponsored Sea Scouts, Ship 262. "Seagull." Mr. Larsen said Cub Scout Pack 262 also received top recognition for its activities during 1966.

Garland Pierce of the Norair Minor Assemblies group is a neighborhood commissioner of scout work. He has participated in scouting for the past six years, and he observes his sixth anniversary of working with Northrop this month.

Robert Workman of Nortronics Quality Control Inspection also is a neighborhood commissioner. Active in scout work for the last five years, Mr. Workman has been with Nortronics for two years.

The Northrop-sponsored Boy Scout Troop 262 meets at 7:30 p.m., Thursdays, at the Ramona School, Hawthorne. The Sea Scouts meet Monday nights at the Navy Reserve Center next to the Hawthorne Civic Center, and the Mar



## Silver Star Awarded for Viet Heroism

As a result of two tours of combat duty in Vietnam, Marine Corps Lance Corporal Howard W. Wade III, stepson of Mrs. Diane Wade, an employee at Nortronics Palos Verdes, has to his credit:

The Silver Star (the nation's third highest honor for military valor) and three Purple Hearts (he was wounded once during his first tour of duty and twice during his second tour of active service).

Corporal Wade was awarded the Silver Star by the President of the United States following the Marine's outstanding display of bravery under enemy fire last September 28.



Corporal Wade

At that time, Corporal Wade and two squads of the 1st Battalion, 26th Marines, were pinned down by heavy enemy fire 11 miles southwest of Danang. Corporal Wade organized defensive fire, made repeated trips through a mine field to carry out casualties, and led back reinforcements from the 1st Marine Division unit.

"Howard is stationed at Okinawa," his stepmother said, "where he will celebrate his 21st birthday in July." He is scheduled for discharge in November after four years of active duty with the Marine Corps.

Corporal Wade's father, Howard W. Wade II, a restaurateur, and his stepmother live in Torrance.

"Howard has celebrated his 19th and 20th birthdays over there," the Marine corporal's father said, "and he's seen a good friend, a young boy who was a guest in our home, die before his eyes."

During the Christmas and New Year holidays, Corporal Wade was stationed with the Marines on Hill 55 in Vietnam. When the Viet Cong broke the holiday truce, one of the areas they attacked was Hill 55.

## Dancing Lessons To Be Offered

A new 10-week series of ballroom dancing lessons opens tomorrow night and continues each Thursday at NRC Clubhouse, Hawthorne.

The cost is \$5 per person for each dance studied.



A NAP AT THE ZOO — Pete Shramko of Norair Graphic Services caught this tiger family taking a nap on a recent afternoon at the new Los Angeles Zoo. For his efforts, he was

awarded second place in a contest held in conjunction with the opening of the Zoo. The picture was originally in color.

## Zoo Photographs Earn Awards for Northrop Men

Pete Shramko of Northrop Norair and Farrell McCann of Northrop Systems Laboratories won special honors recently in photographic competition.

Both took second places in a contest held in conjunction with the opening of the new Los Angeles Zoo.

Mr. Shramko, leadman in the Line Arts section of Graphic Services, took second for a color slide in the "Eurasian" category.

Mr. McCann, an engineer, won two seconds for black and white prints, one in the "Eurasian" category, one in the "Australian" category. Both men photographed tigers, while Mr. McCann also added a kangaroo scene.

## NRC Schedules Prime Rib Dinner

Northrop Recreation Club at Anaheim is borrowing a current favorite concept for its big March 11 dinner-dance to be held at NRC Clubhouse, Fullerton.

This will be a prime rib dinner with participants offered "all you can eat." Dinner will be at 8 p.m., with dancing from 9 p.m. to 1 a.m. to the music of the Tune Launchers.

The cost is \$3.25 for everything and the affair will be limited to the capacity of the house, the first 200 to purchase tickets through NRC.

## MEETING PLANNED

### Board of Officers Elected

The newly elected officers of the Nortronics Management Club will meet for the first time tomorrow in Anaheim.

The men were elected late last month.

President is Tom Barry, deputy program manager, TEAMS, at Nortronics Anaheim.

Vice president is Frank Morehouse, general supervisor of the Configuration Management group at Nortronics Hawthorne.

Dolson Smith, supervisor of General Proposals Estimating, Anaheim, is the new secretary, and Bill Gramm, General Production supervisor, Anaheim, is sergeant-at-arms.

Treasurer is Stan Hawkins.

## Stamp Club to Sell Special HL-10 Issue

Covers commemorating the first flight of the Northrop-built HL-10 lifting body vehicle are now available for 25 cents each through members of the Northrop Stamp Club.

The Club meeting at 7:30 p.m., February 20 will feature a visit from 15 children from the Baptist Children's Home, a talk by Tom Brazil and door prizes. It will be held at the NRC Clubhouse.

## Department Receives Polaris Work

Northrop Needham Department has received follow-on orders totaling over \$1 million for Polaris Submarine Type 11 Periscope Drive Systems.

The contracts cover production of bearing assemblies and spare parts, as well as repair programs and training for field engineering services.

The awards were made to the Nortronics Division by Sperry Gyroscope Division of Sperry Rand, the U. S. Navy Special Projects Office and other government agencies.

The Type 11 Periscope Systems are used to help navigate the nuclear-powered fleet ballistic missile undersea craft.

## Wanderers to See Indio Date Festival

The annual Indio Date Festival will be the destination February 24-26 when the Northrop Wanderers hold their first campout of 1967.

Reservations have been obtained at the Miles City Park for \$2 for the first night and \$1 for the second for each unit.

Make reservations with Northrop Personnel Activities offices prior to February 20.

## SUU: Production Begins

(Continued from page 1)

mounting additional machine guns on an aircraft.

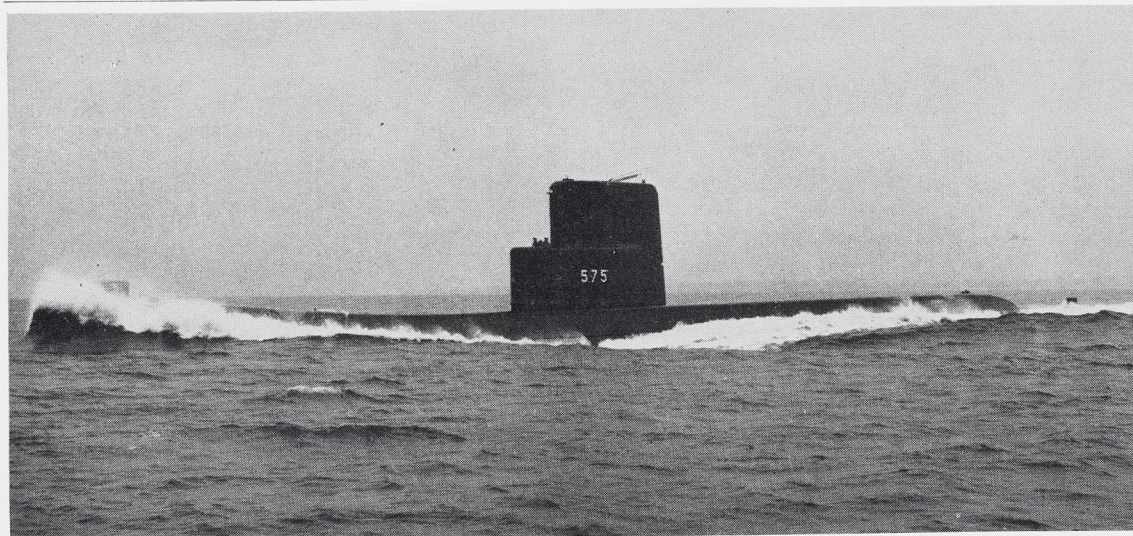
Currently in use at Williams Air Force Base, Arizona, the SUU-20/A helps train pilots from allied nations who will fly the Northrop F-5 fighter in operational use.

Norway and Iran obtained quantities of the SUU-20/A di-

rect from Northrop. Other nations will receive it through military assistance programs.

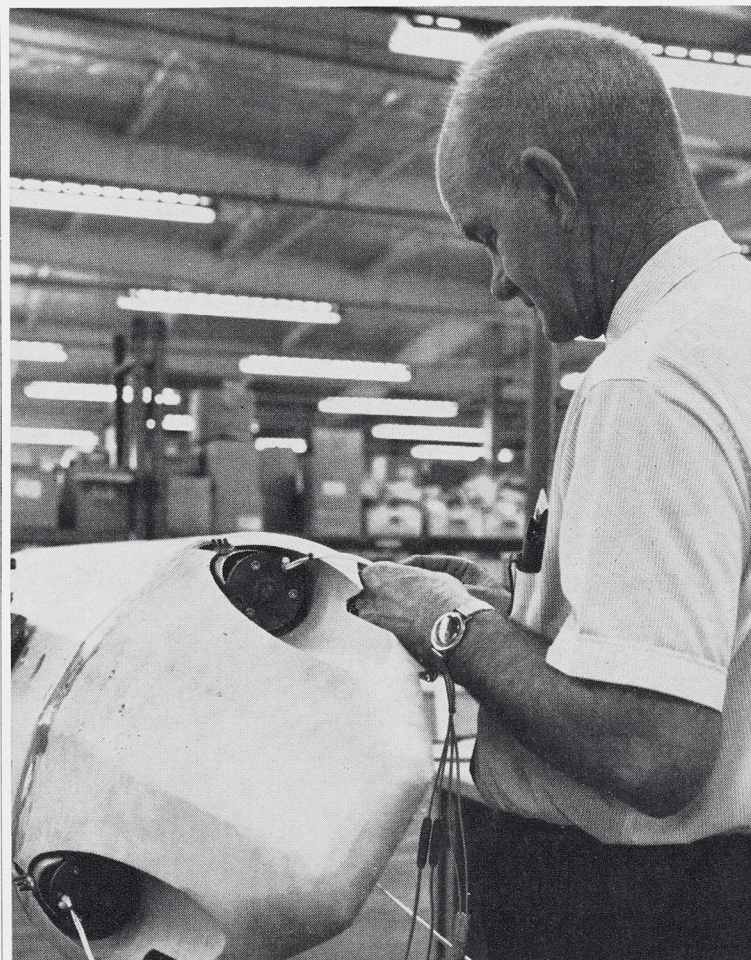
At Anaheim, production efforts are headed by Foreman F. B. (Whitey) Pieper in the assembly operations headed by Bill Gramm.

Charles Barnard is the responsible engineer, and Don Porter coordinates Contract Administration activities.



NORVIPS ABOARD FAMOUS SUBMARINE —A Northrop Voice Warning System (NORVIPS) has been installed aboard the U.S.S. Seawolf, the world's second atomic submarine,

to evaluate NORVIPS for use by the Navy submarine fleet. In the sea trials, taped messages, using a woman's voice, will announce simulated emergencies to the submarine's crew.



CHECKING EACH CONNECTION of Northrop SUU-20/A bomb and rocket dispenser is Quality Assurance Inspector Jim Linn. Nortronics Anaheim is now producing versatile Northrop system utilized for low-cost pilot training in delivery of bombs and rockets.



# NORTHROP NEWS

NORTHROP NORTRONICS

Published biweekly by Northrop Corporation, Beverly Hills, California

Vol. 25, No. 4

March 1, 1967

## Homecoming Greets F-5 From Vietnam

A combat veteran of the war in Vietnam came home to Hawthorne late last month.

Approximately 4,000 Northrop employees formed a welcoming committee.

The veteran, a Northrop-built F-5 fighter, still wore its battle dress—camouflage paint. Displayed along its needle nose were symbols of its combat service.

Small painted bombs indicated combat missions flown.

There just wasn't room for all the bomb symbols it deserved for the little fighter has already logged 720 combat missions, an impressive total.

Other symbols depicted the destruction of enemy sampan boats which carry anti-aircraft guns and large supplies of munitions.

And there were three hearts. Each indicated damage from enemy ground fire at different times.

The experienced eyes of the men and women who had designed and built the fighter spotted other obvious indications of its long combat service—a bit of paint flaked off here, a scratch or dent there and other minor details.

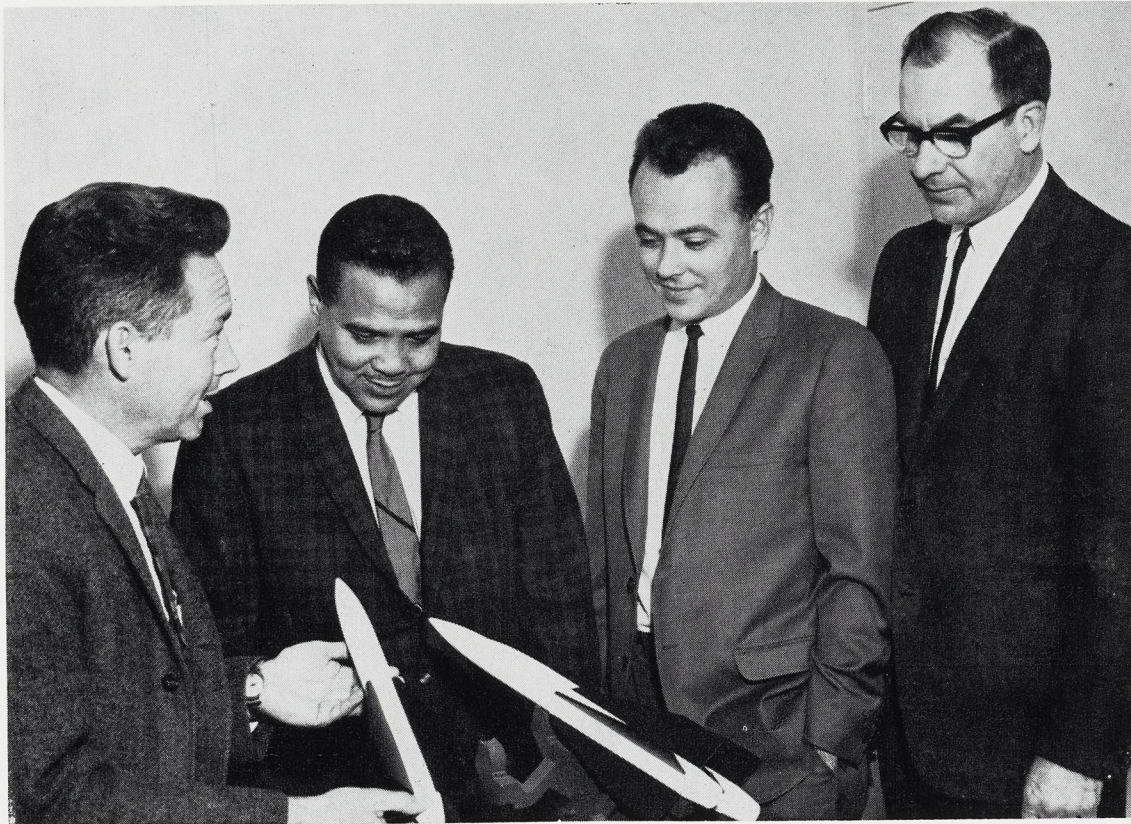
But to the many observers the main thing was the little scrapper was back, the first F-5 to return to the United States from Vietnam since the initial "Skoshi Tiger" evaluation squadron was deployed there in October 1965.

And it came home under its own power.

First, there was a long over-water hop of approximately 8,500 miles from Vietnam.

And for several weeks prior to its Hawthorne homecoming, the F-5 had been put through a series of preliminary flight tests at Norair's Edwards Air Force Base facility.

Hank Chouteau, Norair's chief (See **HOMECOMING**, page 6)



*VETERANS MADE A DIFFERENCE when production was resumed on Hawk launchers and loaders at Nortronics Anaheim. Men like this quartet of engineers worked on the initial*

*Hawk production effort, still support it as needed. They are (from left) Douglas Cook, Charles Stevens, Charles Barnard and John Watson, chief of Project Support.*

## 'MR. CLEAN' AT ANAHEIM

### 'Spring Cleaning' Begins

Nortronics Anaheim personnel in Product Support are rallying behind the banners of "Mr. Clean" this month as they launch an all-out "Spring Clean" operation.

Doug Leavenworth, chief of Product Support, explained the effort, "Product Support provides service for a majority of Nortronics products, past and present," he said. "In the process we must handle vast quantities of data in many forms. We are simply attempting to purge our files of data no longer useful to our operations."

Outdated data will be discarded during "Spring Clean." Remaining data will be divided into two broad categories, that which can be held in storage and that which is necessary for conducting day-to-day business.

"Mr. Clean" signs and posters have appeared throughout Product Support areas in Building Y-12 over the past two weeks. They will remain for the duration of the drive.

Walt Walker heads a committee composed of Fran Brown, Stu Simpson, Ray Lowry and Joe Allen as representatives of all Product Support functions that is guiding the effort. Employees, however, will carry the brunt of the effort, since they must search out the obsolete data.

Operation "Spring Clean" is expected to result in a more attractive Product Support environment, increased operating efficiency, and cost savings in terms of reduced storage facilities, space allocations and maintenance.

## Experience Keeps Hawk Successful

Bill Gramm is a good man to have around. Especially if you're making launchers and loaders for Hawk missiles.

Bill helped put together the first Hawk launcher and loader built at Northrop Nortronics' Anaheim facility back in the mid-1950's. His experience, plus that of a lot of others, is contributing heavily to the success of a new assembly program under way at Anaheim.

"This know-how," says Bill Rothwell, Hawk program manager, "has been a boon to our present operations. It has made it possible for us to slip smoothly into production with a minimum of delays."

Finding veterans of previous Hawk work is a simple task around the Hawk assembly line.

All of the supervisors—W. H. Cozad, F. B. Pieper, J. M. Riley and W. T. Lavoie—have worked with Bill Gramm previously on the program.

Ray Schultz, director of Manufacturing-Materiel, says:

"This experience factor goes well beyond the assembly line. We also have veterans of this program in our Machine shop, Sheet Metals, Welding, Paint and Processing, Quality Assurance and many other functions. This, too, is a great help."

But despite this wealth of experience, re-establishing the Hawk production operation was far from simple.

Everything about the production effort is being planned and executed closely with delivery schedules guiding many plans.

Sheet Metal, Welding and Machine shop operations are currently working approximately 60 men on Hawk efforts, the approximate peak of employment in these areas for this program. Processing and Painting are building toward an 18-man peak expected

(See **HAWK**, page 6)

## First Blood Bank Of Year Planned For Hawthorne

The first Blood Bank collection of the year at Northrop will be conducted tomorrow in Hawthorne facilities, in conjunction with the Red Cross.

Marie Tully, Norair welfare administrator, will be in charge.

The need for blood donations is especially great at this time, Mrs. Tully said, because of increasing requirements for whole blood and plasma for American servicemen in Vietnam.

Mrs. Tully listed some of the advantages of donating a pint of blood each time Blood Bank drives are held:

"First, and most important, the blood saves lives," she said.

"It is used in heart surgery, and it contributes to the manufacture of vitally needed blood medicines."

Employees may sign up for the blood drive or receive further information by calling Norair ext. 4786, Nortronics Hawthorne ext. 263 or Norair (Mariposa) ext. 4028.

## 'Vegas Trip Set By Travel Club

A Las Vegas weekend is on tap for April 7-9 under sponsorship of the Nortronics NRC Travel Club at Anaheim.

Departure will be at 7:30 p.m., April 7 and return at 2 p.m., April 9. Reservations will be at the Aladdin Hotel where a chartered bus will leave and pickup participants.

The cost is \$29 a person and includes bus fare, deluxe hotel rooms, two breakfasts, the hotel's show, and a buffet dinner.

Reservations are being accepted at Anaheim Personnel Activities office only. A \$15 deposit is required with each reservation.

## Teen Speaking Program to Begin

A "Youth Leadership" program to teach teenagers (13 to 18) to speak, carry on discussions and conduct meetings opens Friday at NRC Clubhouse, Fullerton.

The hours will be 6 to 8 p.m. each Friday over an eight-week period.

Northrop Recreation Club and Toastmasters International are joining to make the event possible. There is no charge and parents are welcome to take part.

Parents may register their youngsters now at Personnel Activities or contact Art Bowser, ext. 279, or Chet Guzinski, ext. 257, at Anaheim for further information.

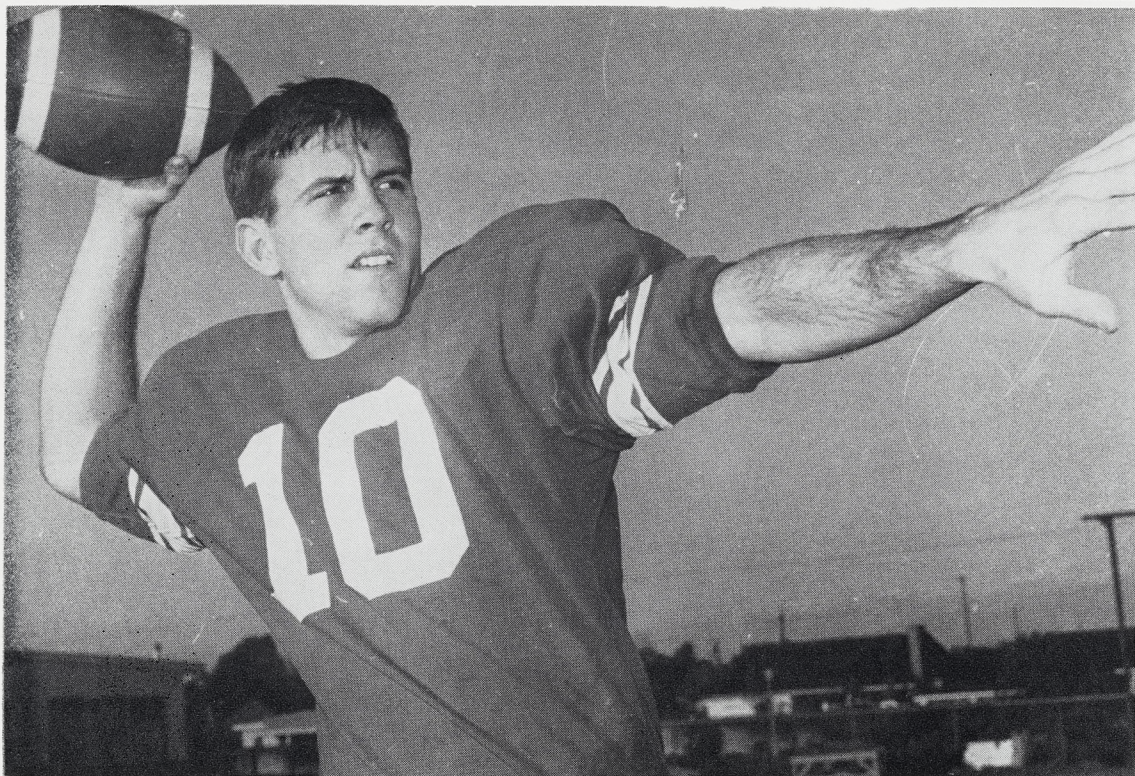
Mr. Bowser, past president of the La Mirada Toastmasters, was instrumental in making arrangements for this activity.



*LIKE A GRACEFUL BALLERINA — Northrop F-5 settles gently down on Hawthorne Municipal Airport runway with Hank Chouteau at the controls. Aircraft is the first F-5 to return from combat duty in Vietnam and still wears its camouflage paint job. Painted along its nose*

*are symbols of its extensive combat service, which includes 720 combat missions, three hits by enemy ground fire. Following display of the F-5 at Norair, it was taken for additional testing. It is scheduled to return to duty with the U.S. Air Force. Photo by Larry Sammons.*





RECEIVERS DOWNFIELD have learned to expect big things when Larry Diel assumes this pose. Young Diel, son of Mary Ann Diel of Nortronics, has been standout quarterback at Pius X High School the past three years. He

scored 23 touchdowns last year, eight by passing, remainder by runs. He is also top basketball and baseball performer and one of four brothers, all active in sports. (Photo courtesy of L.A. Herald-Examiner.)

## FOOTBALL, BASEBALL, BASKETBALL

### The Diels—A Three-Sport Family

To say sports are a way of life around Mary Ann Diel's household is almost an understatement.

Mary Ann, a Receiving clerk at Nortronics Hawthorne, is the mother of four very active boys.

Danny, 13, competes in basketball and baseball; Michael, 15, in football, basketball and baseball; Gary, 16, concentrates on baseball; and Larry, 17, has become a legendary sports figure, although he's still in high school.

"The boys seem to be natural athletes and love to compete," Mary Ann says. "I encourage them and they learn a lot from one another."

Larry has set some examples the other boys will be hard pressed to duplicate.

Take, for example, the past football season.

Larry quarterbacked a Pius X (Downey) High School team to its first-ever Catholic League championship. In the process he scored three touchdowns in a 20-6 victory over Loyola High. It was Loyola's first loss in six years and 37 games.

Larry Diel made the second all-California Interscholastic Federation team. He was a unanimous choice as the player of the year, and also back of the year, on the all-Southeast team where

he earned a first-string berth. His school and the Catholic League named him the most valuable player. In addition, he was selected player of the week and month by many organizations and newspapers.

For the year Larry had a hand in 23 of his team's touchdowns, eight by passing and the remainder by personal runs, including five of distances greater than 50 yards.

He gained 995 yards for an 8.1-yard per carry average.

And he also played defensive safety.

Larry Diel isn't big by present-day schoolboy football standards. He stands an inch shy of six feet and weighs only 165 pounds.

In the words of his coach, Dallas Moon, Larry is "an unbelievable runner; quick, shifty and especially adept at following his blockers."

Larry, in turn, gives much of the credit for his success to his teammates and their ability to throw timely blocks and to pull off the key play.

"I'm not big enough to run over anybody, so I have to run around them," Larry says. "This is not possible without blocking, a lot of help. This I have had all year."

Modesty becomes young Diel who is the team's co-captain and president of the Lettermen's Club. Coach Moon says Larry is a "doer, not a talker, the best possible type of leader."

Larry holds down a part-time job and maintains a 3.1 grade average.

While football has won him plaudits aplenty, Larry also excels in baseball and basketball. Last season he was an all-Southeast choice at shortstop and the junior varsity basketball team's most valuable player. He has won a flock of other honors in all three sports over the past few years both in and outside of school.

At this time young Larry Diel is undecided as to where he will go to college, but he does lean to the thought of becoming a coach.

Right now, however, Larry is concerned about his post as a guard on the Pius X cage squad and the coming baseball season.

The same holds true for the other three Diel boys who suddenly find themselves with a lot to live up to.

Mary Ann Diel is sure the younger boys will make the grade. After all, sports are a way of life with the Diels.

## Credit Union Announces Earnings of 6¼ Percent

Here's good news for shareholders in the Northrop Credit Union—a six and one-quarter (6¼) percent dividend.

It is payable to shareholders on record as of November 30, 1966. It will be reflected in quarterly statements to be distributed during March.

All Northrop Norair, Northrop Nortronics West Coast and Corporate office personnel are eligible to become shareholders. An initial \$1 fee, plus the purchase of one share (for \$5) is all that is required. Subsequent share purchases may be made by payroll deductions.

Northrop Credit Union shareholders held their annual meeting in February at which time they elected a board of directors, a credit committee and a supervisory committee.

In a subsequent meeting the board of directors named officers and committee officials to serve during 1967.

New Northrop Credit Union officers for 1967 are: D. H. Grothe, president; J. S. Penrod, vice president; and Mary B. Delaney, secretary-treasurer.

Mr. Grothe, L. L. Cripe, R. F. Carroll, R. D. Hampton, J. J. Richardson and W. D. Schramm represent Norair and Mr. Penrod and E. J. Johnston represent Nortronics on the 1967 board of directors.

The important Credit Committee for 1967 will be chaired by J. L. Dew and includes as members L. W. Monger and F. E. Wolfe.

Equally important are the services of the Supervisory Committee composed of E. R. Foord, H. J. Grothman, A. W. Johnson, J. J. Mongaham, and G. W. Thornton. Mr. Johnson and Mr. Grothman represent Nortronics, the others Norair. This committee will be chaired by Mr. Thornton.

## First Six Months Earnings Climb To \$5,395,000

Northrop Corporation's consolidated net earnings for the first six months of the current fiscal year amounted to \$5,395,000, or \$1.26 per share on the 4,252,050 common shares outstanding on January 31, up from the earnings of \$4,464,000, or \$1.07 per share on 4,170,910 shares outstanding for the first half of last year.

The announcement was made by Thomas V. Jones, president and chairman of Northrop Corporation.

Sales and other income for the first half totaled \$213,244,000, compared with \$155,752,000 for the same period last year. The increase in sales principally reflects growth in the company's communications business, as well as increases in aircraft activity, Mr. Jones said.

The backlog on January 31 was \$569,000,000, up from \$398,000,000 a year ago.

Net earnings for the second quarter amounted to \$2,868,000, or 66 cents per share, compared with \$2,773,000, or 66 cents per share on the lesser number of shares outstanding in the second quarter last year.

Sales and other income for the second quarter totaled \$111,238,000, compared with \$85,189,000 for the second quarter last year,

with Mr. Grothman as secretary.

Mr. Grothe reported 1966 was a banner year for the Northrop Credit Union, both in the number of new shareholders and in shareholder deposits. He added the Credit Union now has on hand ample funds to grant low-cost loans to shareholders for the purchase of new or used cars, new or used house trailers, for home improvement loans or personal loans.

A recently-added Credit Union service is for loans to finance the purchase of new or used airplanes with loans of up to \$10,000 with repayment spread over 72 months, if desired.

Contact the main Credit Union office, ext. 1117 at Norair, or Personnel Activities offices or outlets in other locations for details.

## Clay Tice jr. To Manage Paris Office

Clay Tice, jr., has been named vice president of Northrop Corporation's International Division and manager of the company's European operations, with headquarters in Paris, France.

He succeeds Gwynn Robinson, who resigned recently to accept a position with another company.

Colonel Tice joined Northrop in 1963 following 22 years of active duty with the U.S. Air Force. Since joining Northrop he has been a key member of the Northrop International organization.

For the past year he has held the position of manager of plans. His primary responsibilities have been the development of corporate-wide markets in the overseas area.

Colonel Tice's assignments in the U.S. Air Force and at Northrop have included responsibilities in many countries of Europe and the Middle East. He has a broad background in the fields of aircraft, communications, and electronics.

## Symphonaires To Appear in Choral Festival

The Northrop Symphonaires will appear Saturday in the 13th annual Business and Industry Choral Festival, to be held at East Los Angeles Junior College.

The event, open to the public, is sponsored by the Los Angeles Municipal Bureau of Music. The Symphonaires will appear at 8 p.m. This will be their 12th appearance in the annual program.

Twelve choruses will participate, and will join in a combined choir for the finale, accompanied by the Los Angeles Symphonic Orchestra.

The Symphonaires are directed by Paul Brizuela, formerly with the Roger Wagner Chorale. The 30-voice group is comprised of Norair and Nortronics personnel.



FROM AROUND THE WORLD duty posts, these Norair Product Support field representatives came recently to take part in F-5 program review, refresher training and discussions with Northrop executives including Thomas V. Jones (seated center) and F. W. Lloyd

(seated left center). Seated (left to right) are Jim Anthony, Don Paap and Bob Cole. Standing are Bill Shuck, Hank Waklee, Ben Paganini, Charles Weaver, Bob Uhrig, Lloyd Millar, Walt Sundberg and Al Bardrum.

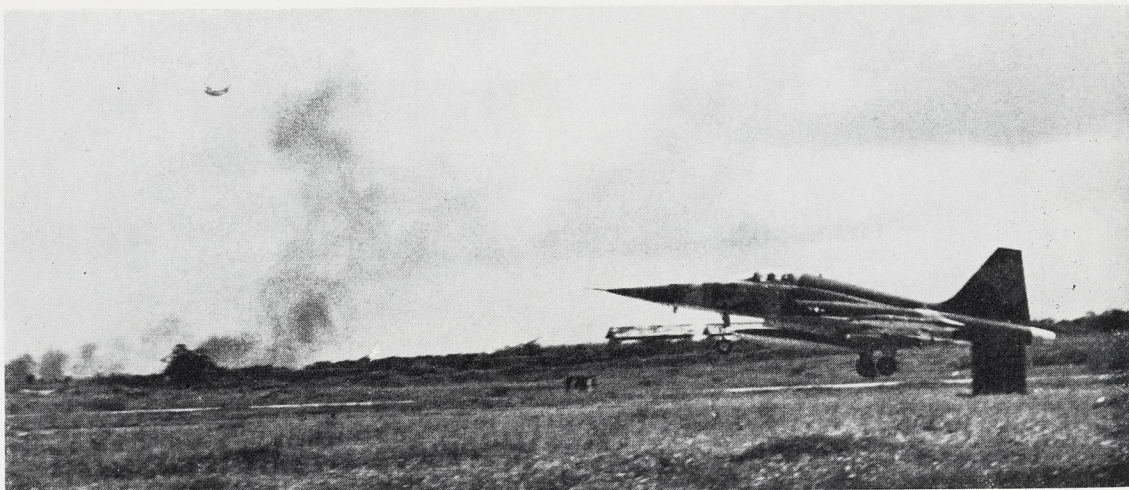




**LOG BOOK ENTRY**—Captain Donald Nelson, after completing a mission in his F-5 against the Viet Cong, fills out his flight checklist. Captain Nelson, a veteran Vietnam pilot, has been in the war-divided territory for more than a year.

## F-5 Pilots From the 10th Fighter Squadron—the Hunt for the VC

Photos by the Author



**TAKEOFF AT BIEN HOA**—A Northrop-built F-5 Freedom Fighter takes off from its runway at Bien Hoa, one of the largest U.S. bases

in Vietnam. From there, F-5 pilots can swiftly reach any Viet Cong-held territory in South Vietnam.



**THE IRON TRIANGLE**—Smoke rises from a U.S. raid on Viet Cong gun emplacements near the edge of the Iron Triangle. The Viet Cong moves men and materiel through the area at night, when U.S. attacks are less likely to occur.



**COLONEL WILLIAM MOL**—Lieutenant Colonel William D. Mol is new commander of the 10th Fighter Squadron.



**TECHNICAL REPRESENTATIVES** from Northrop Norair to the 10th Fighter Command Squadron are (from left) Harold E. McVey, Alvin D. Christensen, Orville L. Beck and Elbert Tomlin. The men are assigned to the Field Service and Training group.

## Conflict in Vietnam; A Day With the Pilots of the 10th

**EDITOR'S NOTE**—Ernest Zaugg, author of the following story, has been in Vietnam for several years, covering the hostilities as a free-lance reporter and photographer.

His articles are published in the Northrop News so the men and women of Northrop will have a fuller understanding of the roles of the valiant Air Force men who fly, maintain and arm the F-5's in Vietnam.



Mr. Zaugg

The following is Part 2 of a two-part series. The first segment appeared in the February 15 editions of the Northrop News.

By ERNEST ZAUGG

Bien Hoa, Vietnam—Here on this large U.S. airbase in Vietnam, I recently sat in on a preflight briefing of two F-5 pilots of the 10th Fighter Command Squadron—Captain Donald Nelson and Major Charles Luther, both from Nebraska.

The weather man gave them meteorological reports. The intelligence officer told them

about other operations to which they might be diverted. Then he gave them the target of the day, a suspected Viet Cong supply center and camp a quarter of a mile square deep in a forest.

After the briefing, Nelson and Luther discussed their target. Since it was Nelson's flight, he told Luther how he wanted the target approached, and told him what to do if anything went wrong. Then he read a few paragraphs from the emergency procedure manual of the F-5.

All this took half an hour. Then they rode out to their F-5 Freedom Fighters and took off. In 15 minutes, they were over their target. They bombed and strafed it for 15 minutes, and then returned.

Such is the target for the day for jet pilots in Vietnam. Eight out of ten targets are like this. The pilots call them "the same old drill" or "splinter targets" because of the trees that are splintered. They are no more trouble than a milkman placing milk on the doorstep.

Then comes an unusual day.

Two Army teams of forward controllers, who direct artillery, were surrounded in the jungle

by the Viet Cong. Captain Nelson went to their aid with four Freedom Fighters. The clouds were low, and they had to sneak into their target through a hole in the weather front. An FAC (Forward Air Controller) in a small Bird Dog plane marked their target with white phosphorus. They made 10 passes, and were gone in four minutes. This strike saved the lives of the men on the ground.

Captain Clyde Johns took hits on one of his passes. His wing man, Major Richard Williams, saw 20 to 30 holes in the aircraft. There was a tail fire 30 feet long. Still, Captain Johns climbed to 2,500 feet. Below his plane was Viet Cong territory. Another minute would have brought him to the South China Sea. There was an explosion and a great ball of fire.

Captain Johns ejected, and landed knee-deep in a rice paddy. He set out with huge strides for the sea through the Viet Cong-held area. Seven Viet Cong came toward him, shooting. Major Williams made a low pass and drove them back into the forest. Then, he had to refuel. Two Skyraiders took over, covering Johns as he ran toward the sea. One pilot was shot down and later res-

cued.

After a half-hour of walking, Johns was picked up by a helicopter. He was taken to a hospital for observation, as some pilots are in a state of shock after a rescue. Captain Johns did not even have a rapid pulse.

Another unusual day. Major Luther was returning from a routine target with three ships. They had expended their bombs, and had only their 20-millimeter cannon and ammunition. They got a call to aid a mile-long convoy of the 1st Infantry Division, which had been ambushed by a regiment of the Viet Cong.

Major Luther and his men were first to the target. They strafed the start of a human wave attack and held the Viet Cong at bay until other help arrived.

Since the Freedom Fighters have only one seat, I could not fly a combat mission. I did ride with the FAC who directs them. We flew over the infamous Iron Triangle, a Viet Cong forest hideout of seven square miles, which has seen many bloody encounters. Bomb craters made its face look like a valley on the moon. Patches of yellow, dying foliage showed where we had treated the trees

chemically to deprive the Viet Cong of cover. The Viet Cong had built many round gun emplacements, foxholes and long trenches. They also had taken hundreds of slices out of the road which skirts the forest to keep out military vehicles.

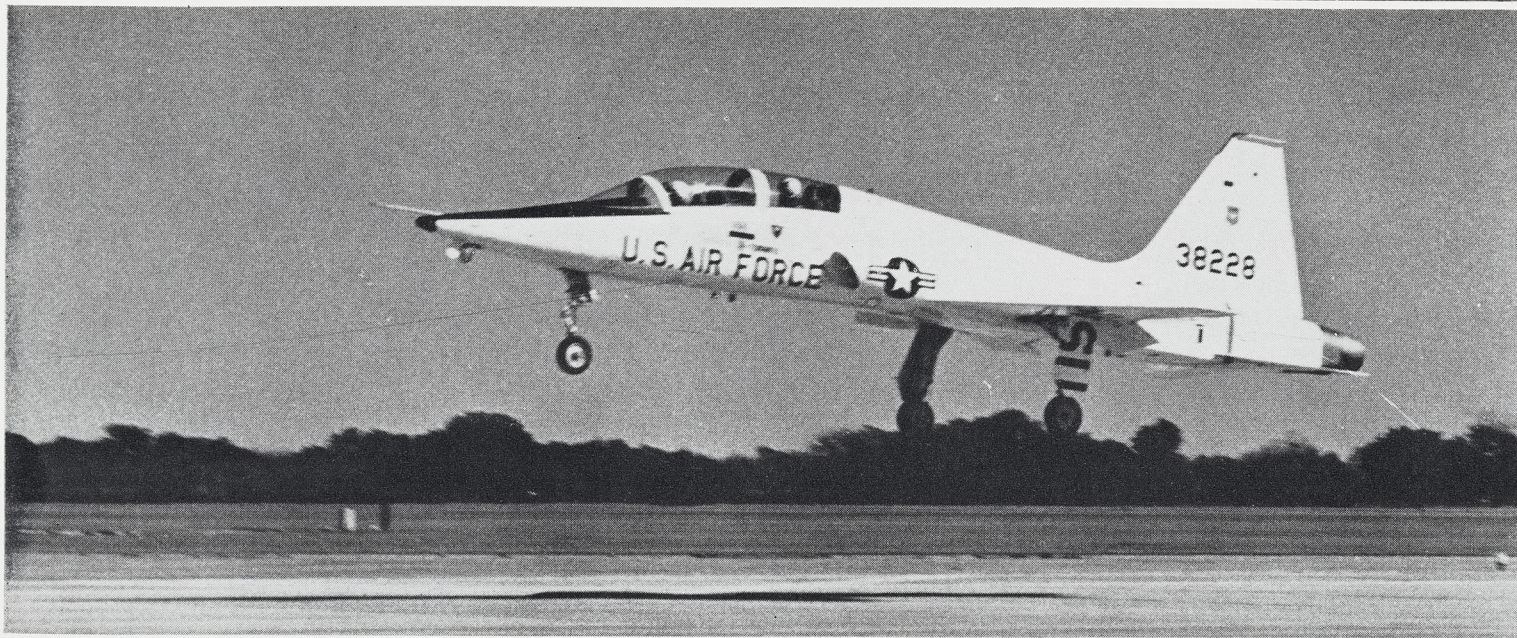
The FAC, Lieutenant Colonel James Poore, had three jets at his disposal which he directed against a suspected Viet Cong encampment. He held the F-5's firmly in hand, telling them from which direction to approach the target, and even giving them the signal to drop the load.

The F-5 pilots regard the war chiefly as a test of skill. Other than that, they are not deeply involved. They have few, if any, contacts with the Vietnamese. Precise figures, maps, angles of approach, enemy fire, rescue techniques—these are their interests.

They are always looking for greater tests for their skill. The ultimate test for which they long is the duel with the Russian-built MIG, flown by the Communist North Vietnamese.

If we did not have men like these, and planes like the F-5, we would long since have been using chopsticks.





**T-38 ON TAKEOFF**—Northrop's T-38, which recently completed its one millionth hour in flight for the Air Force's Air Training Command, will be flown by student pilots from nine

bases in the future. The ATC recently announced training expansion plans. Pilot instructor training will be moved to Tyndall Air Force Base, Florida.

## Dr. Schlitt To Direct Development

Dr. Helmut Schlitt, a leader in guidance and control for the past 20 years, has been named director of advanced development for Northrop Nortronics. He will direct the planning and development of new products at Nortronics' Technical department in Hawthorne.

Before joining Nortronics, Dr. Schlitt was vice president of new product technology for Litton Industries' Guidance and Control Systems Division.

He also held posts as director of engineering for avionics activities of Bell Aerospace Corporation and chief of guidance development at Marshall Space Flight Center, Huntsville, Alabama.

Dr. Schlitt is credited with development of the concept of the case rotation technique for gyros. He holds many patents in the field of inertial guidance, including those for a two-degree of freedom gyro with case rotation and gimballess suspension system, and a linear electrostatic accelerometer with variable measuring range.

Dr. Schlitt earned his degrees in electrical engineering at the University of Darmstadt in Germany.

## Duplicate Bridge Lessons Planned

The NRC Bridge Club is offering players a chance to play bridge the duplicate way.

The club meets regularly on the first and third Friday and second and fourth Tuesday of each month from 7:15 to 11 p.m., at the NRC Clubhouse, at Hawthorne.

Commissioners Henry Griggs, Norair, ext. 4670 and Charles Fuller, Nortronics, ext. 625 ask that participants indicate their preference, ACBL sanctioned duplicate or duplicate without sanction, when signing the attendance sheet.

## Nortronics' Stevens Named to Committee

Frederick Stevens, Corporate vice president and Nortronics general manager, has been named to a key committee of the Palos Verdes Peninsula Chamber of Commerce. Mr. Stevens will serve on the Plans and Policy committee, which helps chart the future course and activities of the Chamber.

Mr. Stevens is a former vice president of the chamber.

## THE NEXT MILLION HOURS

# T-38 Training Expansion Plans Announced

The Air Force's Air Training Command has announced plans to expand T-38 jet pilot training from eight bases to nine, and to move its pilot instructor training program to Tyndall Air Force Base, Florida. Northrop-built T-38's are an important element of the Air Force pilot training program.

The ATC conducts its training on a fiscal year basis. From the eight bases used for training in the fiscal year 1966-67, approximately 2,760 pilots will be graduated. Under the expanded program, approximately 3,200 pilots

will be graduated in 1967-68 from nine bases.

Current training sites are Craig AFB, Alabama; Vance AFB, Oklahoma; Moody AFB, Georgia; Williams AFB, Arizona; and Reese AFB, Laredo AFB, Laughlin AFB and Webb AFB, Texas. Eight classes a year are trained at each base.

Randolph AFB has been announced as the ninth base, probably beginning training operations in July, at the start of the 1967-68 year.

The 53-week undergraduate pi-

lot training course includes 120 hours of instruction in the T-38, as well as training in smaller planes, 357 hours of academic instruction, and 236 hours of officer training.

To meet the increased demand for instructors, the pilot instructor training program will be expanded as it is moved to Tyndall AFB, also scheduled for the start of the 1967-68 fiscal year.

More than 800 T-38's have been delivered by Northrop to the Air Force to date, and more than 600 of these are assigned to the ATC. The supersonic

trainer also is used by the National Aeronautics and Space Administration (NASA) for maintaining flight proficiency of astronauts.

The T-38 is 46 feet, 4 inches long, has a wingspan of 25 feet, 3 inches, and weighs approximately 12,000 pounds.

Its two General Electric J-85-5 engines are capable of pushing it virtually straight up to an altitude of 55,000 feet at the rate of 30,000 feet per minute. Its maximum speed is approximately 850 miles an hour.

## COMMISSIONERS SET SCHEDULES

# Bowlers Keep Busy as Summer Nears

Calendars may not show it yet, but summer is just around the corner and NRC bowling commissioners are making plans for their annual summer leagues.

This is the leisure time of the year for bowlers, a time for low handicappers to improve their skills or new bowlers to "break in" and prepare for the longer winter loops.

As usual NRC commissioners have set up their schedules to benefit the beginner. There is a variety of leagues rolling throughout the week and at establishments throughout the areas where most Northrop employees live.

The Hawthorne area keggers may select from:

Mondays, a Mixed Four Handi-

cap at Tropicana; Tuesdays, a Men's Scratch Trio and a Women's Scratch Trio at Southwest, a Mixed Four (low average) at Del Mar; Wednesday, a Mixed Four Handicap at Missile; Thursdays, a Mixed Four Handicap at Missile, a Mixed Peterson Point Scratch Trio at Gardena, a Mixed Four (low average) at Tropicana.

For second shifters there is a Wednesday (Thursday at 1 a.m.) Mixed Handicap Trio at Del Mar and a Thursday (Friday a.m.) Men's Scratch Trio at Del Mar.

Down Anaheim way plans call for a Tuesday night Mixed Four to roll at Carter Bowl, Fullerton.

Leagues will start at varying times during the first three weeks of May. Check entry forms cur-

rently available through Personnel Activities offices for details.

Personnel Activities offices or NRC bowling commissioners may be contacted for specific information. They are: Bill Myerson, ext. 4275, and Vi Jennings, ext. 2492, at Norair; Dorothy Baldwin, ext. 456, at Nortronics Palos Verdes; and Vito De Paul, ext. 443, at Anaheim.

Northrop Ventura bowlers are busy in three leagues, now under way.

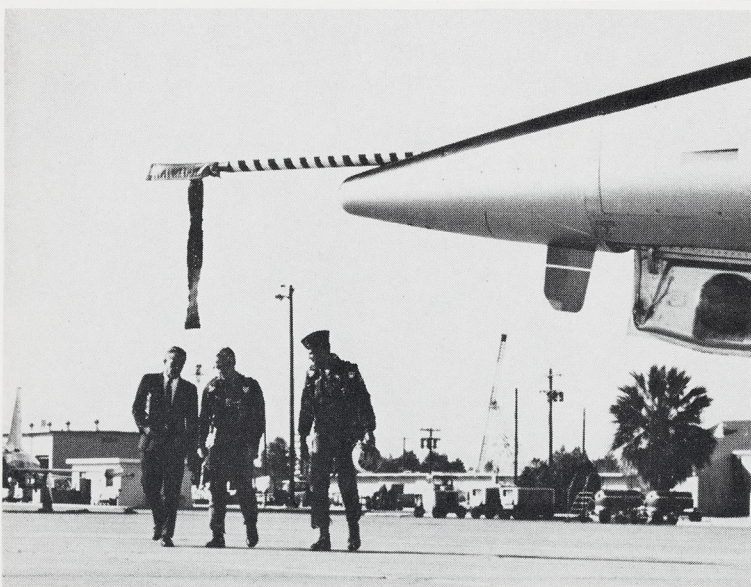
One league is at the Camarillo Lanes, in Camarillo, where Roland Emnas of the Ventura Electronics Laboratory rolled a three-game series of 662. His games, in order, were 206, 201 and 255. Going into that series, Mr. Emnas had a 146 average.

In the Conejo Valley, Mike Lewis and Gloria Green hold the highest series of the season, while Marty Frank and Alta Hegamau have bowled the highest single-game scores.

In Van Nuys, at the Woodlake Bowl, Casey Miller has the season's highest series, 646, with games of 242, 203 and 201. Dick Shewmaker, who had the highest series, still has the best single-game score. In women's competition Marion Ellethorpe has best series, and Bess Silvers has high game.

## Anglers Schedule March 21 Meeting

The Northrop Sea Anglers will hold their next meeting on March 21, 7:30 p.m., at the NRC Clubhouse, Hawthorne, it has been announced by Commissioners Bill MacCorkell, Nortronics and George Title, Norair.



**VISIT TO WILLIAMS**—Air Commodore W. K. Carr (center), director general of the Canadian Air Force, talks with Northrop representative Hank Waklee during a visit to Williams Air Force Base, Arizona. At right is Major Robert Whitener, veteran F-5 pilot, who brought the commodore to Williams in a T-38.



**FRAMED BY AN HL-10 tail fin (left) and the wing of an Air Force B-52 (top), a NASA technician checks out circuitry on pylon which connects Northrop-built lifting body research vehicle to its B-52 mother ship prior to a recent glide flight at NASA's Flight Research Center.**



Classified

Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private business are not accepted. The Northrop News reserves the right to edit or omit ads. Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 64. Ads are limited to one item and one ad per person each issue. Deadline is noon Wednesday, one week before publication.

**For Sale**  
**Inner Tubes**, 4 5-60x15, will fit Porsche or Volkswagen tires, \$8 for all, Santa Monica, 395-7368. A  
**Olds**, Cutlass, 1964, p/s, a/c, new brakes, 2-dr., 290 h.p., \$2,000. Torrance, 378-0021. A  
**Volkswagen** 113 sedan, 1965, 1-owner, \$1,295. Inglewood, 755-1071. A  
**Home**, custom built, 3-bdrm., 1 1/4 bath, bltin features, fenced backyard, dps., cpts., 2 miles from Northrop Plant 1, \$28,500. Hawthorne, 675-8829. A  
**Cabin**, Lake Arrowhead, fireplace & thermo. floor heat, open-beam ceiling, walking distance to Lake & Village, \$12,950. N. Hollywood, 761-9645. A  
**Lincoln Continental**, convt., 1962, new trans., \$1,175. Garden Grove, 714-JE 4-2459. A  
**Shotgun**, Remington 16 ga., auto., Model 11, recoil pad, case, Cutts comp., adj. tube & 2 tubes, full & mod, \$100. L.A., 384-4017. A  
**Amplifier**, Harman Kardon, 35 watt, stereo, \$25. P.V., 377-4623. A  
**Chevrolet**, 1955 Bel Air, 2-dr. sedan, 6-cyl., r/h, Powerglide, \$225. Redondo Bch., 375-7401. A  
**Honda**, 1967, 90 cc, 1,000 miles, inclcs. helmet, \$275. Anaheim, 714-535-7679. A  
**Triumph**, 1957, removable h/top, needs painting, \$350. Torrance, 835-5708. A  
**Dress**, handknit, blue cabled shift, fits sizes 12-16, 100% mohair, worn once, \$15. P.V. Pen., FR 8-1863. A  
**Dining Room Set**, blonde, 3-pc., china closet/buffet & 6 upholstered chairs, \$250. Lennox, OR 7-6604. A  
**House**, modern 2-bdrm., low down, Inglewood, \$26,950. L.A., AX 2-9489. A  
**Dining Room Set**, mahogany, dropleaf, ext., Duncan Phyfe table & 4 chairs & bent glass breakfront, \$150. Reseda, 342-9319. A  
**Ford**, 1956 station wagon, 66,000 miles, recent o/haul, good tires, solid radio, htr., auto. trans., \$165. Lawndale, 679-3070. A  
**Aquarium**, 34x16x12, about 20 gals., w/piston type pump, htr., filters, sand, reflectors, \$28. Hawthorne, OS 6-5101. A  
**Oldsmobile**, 1963, F-85 Cutlass, trans. radio, htr., b/seats w/floor console, \$1,250. San Pedro, 832-1886. A  
**Boat**, 1965, 16' fiberglass, 40 h.p. Evinrude o/board, elec. starter, full size cover, trailer, new tires, \$899. L.A., 645-3852. A  
**Motorcycle**, 1964 Triumph, 650 cc, \$750. Inglewood, 674-1847. A  
**Amplifier**, hi-fi, & speaker, portable, \$39. So. Pasadena, 759-9476. A  
**Refrigerator**, 14 cu. ft. Philco, \$45. P.V. Pen., 377-3806. A  
**Roller-Shoe Skates**, white, girl's, professional, size 6, \$35. Torrance, 371-8564. A  
**Wig**, dk. brown, cost \$150, \$50. Torrance, FR 8-1488. A  
**Tires**, 4, size 7-10x15, \$45. Box 401. A  
**Wheelchair**, \$75; walker, \$35, or both for \$100. Hawthorne, 679-2330. A  
**Studebaker**, 1962, 4-dr., r/h, auto. trans., \$395. Redondo Bch., 376-9875. A  
**Baby Carriage**, imported, brakes, bonnet, white tires, ball bearing wheels, \$20. Torrance, 324-5698. A  
**Camping Trailer**, 15' Viking, sleeps 5, fully equipped, \$350. Gardena, DA 4-6484. A  
**Motorcycle**, Yamaha 80, trail, big tires, \$250. Hawthorne, 679-5371. A  
**Yamaha**, 1965, 250 cc Catalina YOS 3, lge. tires, new paint, helmet, \$100 & take over \$18.65 mo. pymnts., \$302 bal. Torrance, 326-4075, 379-7069. A  
**Washer**, Easy wringer-type, \$20. Hollydale, ME 3-2395. A  
**Bedroom Set**, twin, antique ivory, inclcs. Mr. & Mrs. chest, desk, occasional chair, other items, \$125. Long Bch., 431-4073. A  
**Beds**, single, complete w/box springs & mattresses, adjust. frames, \$15 ea. or \$25. Torrance, 323-5740. A  
**Honda**, 1965, low mileage, \$300. Inglewood, 672-0608. A  
**Arm Saw**, Craftsman, 9" radial, w/accessories, cost \$230; \$145. Hawthorne, 676-6122. A  
**Chevrolet**, 1961 Parkwood sta. wagon, V-8, auto., p/s, r/h, \$895. Manhattan Bch., 374-6003. A  
**Shopsmith**, Mark V w/standard access., \$160. Torrance, DA 3-1026. A  
**Chevrolet**, 1962 Impala, V-8 auto., p/s, p/b, factory air, \$995. Redondo Bch., FR 5-5760. A  
**Pickup**, 1965 Datsun, 4-spd., r/h, 6 ply tires, h/d bumpers, extras, \$975. Lakewood, 425-1030. A  
**Mercury Meteor**, 1962 4-dr. sedan, V-8, stick, r/h, air cond., \$600. Torrance, FR 1-2705. A  
**Volkswagen**, 1963 sedan, w/w tires, Becker Monte Carlo radio, \$1,050. Huntington Pk., 589-8746. A

**For Sale**  
**Radio**, pre-1930, compact bakelite arabesque design cabinet, adj. speaker, IRC brand, \$35. Sunland, 353-0797. A  
**Van-Camper**, 1966 Dodge A 100, V-8, auto. trans., 5,200 G.V.W. package, side awning, in warranty, \$2,595. Newbury Pk., 805-498-2529. A  
**Pontiac**, 1963 Grand Prix, full power, r/h, fact. air, \$1,500. Torrance, 326-2296. A  
**Sewing Machine**, Necchi, all attachments, \$300 value, \$100. Lynwood, 537-1463. A  
**Scooter**, 1960 Harley Davidson Topper, 10 cu. in., 2 cy. eng., auto. trans., 1,600 act. miles, \$195. Claremont, 714-626-1597. A  
**Corvette**, 1965, 365 h.p., Hurst 4-spd., 4.56's, American mags, 8 1/2" Goodyears, headers & glass packs, towbar & brackets, \$3,600. Hawthorne, OS 5-1365. A  
**Lot**, C-2, 80x120, in Cabazon Springs, streets being paved, water & elec. avail., \$600 for equity & assume bal. of \$1,450 at \$17 mo. Torrance, FR 5-7817. A  
**Shoe Skates**, ladies' white, size 6-6 1/2, roller derby wheels, \$7.50. Inglewood, 673-1133. A  
**Volkswagen**, 1959, w/factory air cond., radio, new tires, 1300 series, \$1,350. Simi, 805-526-8927. A  
**Sewing Machine**, portable, \$25. Lynwood, 631-0858. A  
**Tonneau Cover** for 1958-62 Corvette, black, \$15. Hawthorne, 772-1085. A  
**Utility Trailer**, 4x8' x 18", \$35. Hawthorne, OS 9-6219. A  
**Tape Recorder**, Grundig, & access., needs minor repair, \$65. Hawthorne, 676-5104. A  
**Pontiac**, 1937 cpe., 2-dr., \$225. Hawthorne, 678-6027. A  
**TV**, RCA, 19", portable, w/stand, b/w, \$60. Inglewood, 672-6779. A  
**Chevrolet**, 1956 station wagon, 6 cyl., \$150. Torrance, 371-8395. A  
**Ford Fairlane**, 1967, GTA, 390 cu. in. T-Bird eng., fact. air cond., p/s, dble. disc p/b, select-shift, extras, \$3,400. Redondo Bch., 379-9951. A  
**Aquarium Outfit**, 10-gal., complete w/stand, \$10. Manhattan Bch., FR 4-8608. A  
**TV**, 21" portable, new picture tube, \$40. Gardena, 327-5588. A  
**Dryer**, Westinghouse auto., needs work, \$10. Anaheim, 774-2779. A  
**Contour Chair**, two-seater, modern, walnut w/gold washable fabric, \$75. Simi, 805-526-7767. A  
**Corvette**, 1964 roadster 327, 4-spd., 2 tops, \$2,900. Orange, KE 2-5726. A  
**Mercedes Benz**, 1958, 190 SL convt. coupe, \$1,225. Fullerton, 526-2155. A  
**Folk Guitar**, Guild Troubadour, 6 string, w/case, \$80. P.V. Pen., 377-9723. A  
**Thunderbird**, 1965, air cond., full power, stereo tape, \$2,250. Gardena, 329-0778. A  
**Petrified Wood**, Oregon thunder eggs, 50¢ lb. Redondo Bch., FR 6-3174. A  
**Ski Boat**, 15' Fleetcraft, trailer, Evinrude 35, big twin motor, \$400. Bellflower, TO 7-0662. A  
**Elva MKV/Chevy II**, w/fuel injection & trailer, \$1,600. L.A., 714-539-7071. A  
**Sloop**, Pearson Ensign, 22' 6", fiberglass, fully equipped, sleeps 2, \$2,995. Thousand Oaks, 805-495-2641. A  
**TV-Radio-Phono**, comb., w/extra spkr., Olympic, 25", \$100. Gardena, 732-8536. A  
**Chevrolet**, 1959 station wagon, 4 new tires, \$535. La Mirada, WH 1-1319. A  
**Honda**, 1966 Super Hawk, 305 cc, 29 h.p., less than 4,000 miles, \$485. Long Bch., 434-0885. A  
**Boat**, 18' inboard-o/board, 110 h.p., fully equipped, \$2,800. Downey, TO 2-0656. A  
**Dual Quads**, w/C series AFBS & alum. manifold for Chevrolet, \$50. Anaheim, 774-6012. A  
**Mustang**, 1965 h/top, r/h, 4-spd., positraction, stereo tape, \$1,800. Hawthorne, 644-1690. A  
**Drum Set**, Singerland, base, snare, 2-toms, 23" cymbal & stand, \$225. San Pedro, 833-9165. A  
**Crib**, high chair, playpen, \$20 or sell sep. Harbor City, 325-8175. A  
**Motor-Gen. Set**, 1/2 h.p. Craftsman, 60 cps motor drives G.E. 400 cps gen., \$20. P.V. Ests., FR 8-2933. A  
**House**, 1,600 sq. ft., 2-bdrm., 1 1/4 bath, fireplace, bltins, cpts., dps., family rm., \$29,500. Redondo Bch., 372-0129. A  
**Fuel Injection**, for Corvette, \$100. Torrance, 835-5052. A  
**Shock Absorbers**, rear end pr., fit 1963-'64 Chevrolet Monroe load leveler, Serial LL-502, C1104, \$31. La Crescenta, 248-1397. A  
**Playpen**, \$3. Long Bch., 596-9748. A  
**Disc Brake Pads**, \$7.50 set. Garden Grove, 714-539-9964. A  
**Record Changer**, Garrard AT-60 w/Empire 880-pe cartridge, \$25. L.A., 732-4986. A  
**After-Ski Boots**, size 6, \$5. Torrance, 328-6662. A  
**Coffee Table**, 2-level, maple, \$25. Hawthorne, 679-7544. A  
**Poodle**, black female, 3 mos. old, \$50. Garden Grove, 537-1120. A  
**Car Buffer**, Craftsman, hvy. duty, 1,400 rpm, \$25. L.A., GR 4-7895. A  
**Revolver**, model 27, .357 Magnum, Smith & Wesson, 8 1/2" ribbed barrel, target sights, holster, box of shells, \$110. L.A., 645-1621. A  
**Muffler**, Maremount, fits 1962 & '63 Olds Cutlass & F-85's, \$15. Cypress, 714-827-4393. A

**For Sale**  
**Home**, Briarwood townhouse, 3-bdrm., 2 1/2 bath, Gold Medallion, deluxe decor., pvt., patio, \$36,950. Inglewood, 678-2728, 672-3655. A  
**Sleeping Trailer**, fold down-type, \$50. Downey, TO 2-3310. A  
**House**, 3 baths, 3-bdrm., large rumpus rm., 2400 sq. ft. on 1/2 acre lot, 4 yrs. old, located in La Habra, low down payment if buyer qualifies, Norair Credit Union, Ext. 1117. A  
**Ford**, 1965 Galaxie 500 tudor, r/h, p/s, factory air, 25,000 miles, \$1,925. Long Bch., GA 3-1363. A  
**Accordion**, Universal, 120-bass, Mother-of-Pearl, full keyboard, 5 switches w/velvet lined case, orig. cost \$475; \$100. Torrance, 371-9651. A  
**Dryer**, Kenmore auto., elec., 220 v, \$90. Harbor City, 325-7739. A  
**Washer-Dryer**, Kenmore, gas, \$100. Torrance, 370-1116. A  
**Hair Dryer**, Rayette air conditioned w/lounge chair, \$100. Hawthorne, 676-4273. A  
**TR4-A**, 1966, I.R.S., wire wheels, r/h, tonneau cover, boot, \$2,500. Inglewood, 677-4282. A  
**Camper**, Teardrop, but. stove, 25 lb. icebox, pump sink, sleeps 2, 48x80, attach. canvas, 108 sq. ft. living space, \$250. Inglewood, OS 6-8893. A  
**Karmann Ghia**, 1964 sport cpe., r/h, w/s/w, s/belts, leatherette upholstery, \$1,500. Anaheim, KE 5-3917. A  
**Rifle**, 30-06-A3, never fired, \$50. Hawthorne, OS 5-1064. A  
**Volkswagen**, 1966 sunroof, squareback, many extras, \$2,195. Torrance, 320-0290. A  
**Washer & Dryer**, matching, Kenmore, 8 yrs. old, white, 8 lb. capacity, \$75. Hawthorne, OS 5-7740. A  
**TV**, Zenith 21" table model, b/w, remote control, walnut grain cabinet, \$25. Hawthorne, 675-4752. A  
**Cabin**, in Running Springs, 2 bdrms., view lot, fireplace, lge. sun porch, natural gas, 1/2 mile to town, \$14,250. Wilmington, 834-4184. A  
**Buick**, 1956 4-dr. h/top, orig. owner, r/h, p/s, \$165. Sepulveda, 894-0312. A  
**Drums**, \$145. Torrance, DA 9-2925. A  
**Guitar**, 12-string, w/hard shell case, \$55. Baldwin Hills, 295-7972. A  
**Boat**, 12' Burchcraft, trailer, 7 1/2 h.p. motor, \$200. La Mirada, WH 1-1865. A  
**Corvette**, 1955 w/1963 327 cu. in. hi-performance eng., \$675. Long Bch., 423-4491. A  
**Outdoor Motor**, 10 h.p., \$60. Redondo Bch., 375-7568. A  
**Greeves**, 250 cc Scrambler, just rebuilt w/new Challenger piston, other extras, \$450. Inglewood, OR 1-5103. A  
**Jeep Wagoneer**, 1965, 4wd, ohc 6, hubs, r/h, p/s, p/b, auto. trans., lug. rack, trailer pulling pkg., \$2,400. Torrance, 320-4823. A  
**Parachute**, orange & white panels, 28' modified to dble. T, \$50. Inglewood, OR 7-8301. A  
**Apt. Bldg.**, 9 units, excellent location, \$12,300 yearly gross, \$105,000. Torrance, 325-9832. A  
**Boat**, 15' Elgin, 40 h.p. eng., windshield, steering wheel, tilt bed trailer, 1 pr. skis, \$850. Bellflower, 867-1476. A  
**Willys**, 1953, 6-cyl., 2-dr. sedan, \$50. Manhattan Bch., FR 2-4269. A  
**Truck Body**, 3/4-ton stake, 8' long, \$75. Gardena, DA 4-1719. A  
**Ford**, 1965 Galaxie 500, 4-dr., V-8, auto., \$1,500. Torrance, 328-3576. A  
**Amplifier**, 100 watt stereo, \$90. Torrance, 326-6195. A  
**Love Seat**, Lawson, suitable w/early American, \$50. Torrance, 326-0513. A  
**Anglia**, 1959 English Ford, 2-dr. floor stick, \$150. Hawthorne, OS 5-4380. A  
**Volkswagen**, 1961 6-pass. 1/2-ton pickup, r/h, low mileage, \$500. Sepulveda, 894-0312. A  
**Saw**, Dewalt, 10" radial arm, 1966 model w/metal cabinet, dado blades, comb. blade, drum sander & Jacobs chuck, \$200. Torrance, 371-2137. A  
**Volkswagen**, 1959 9-pass. sta. wagon, 1964 40 h.p. eng., \$500. L.A., 754-0078. A  
**Tape Recorder**, Panasonic, 2-spds., plugs for mike, complete w/instructions, 1 yr. old, cost \$130, \$60. Gardena, 329-9484. A  
**Cadillac**, 1956 convt., tonneau cover, top serviceable, \$175. Torrance, 324-3690. A  
**Beach Lot**, Oxnard Shores, all improvements in & pd., \$7,200 & terms, 6% or \$6,800. Manhattan Bch., FR 4-3359. A  
**Cabins**, 1-bdrm. & guest house, furn., 100' x 200' lot, on stream, close to village, in Idyllwild, \$21,500. L.A., PL 4-5288. A  
**T-Bird**, 1959, \$575. Hawthorne, OS 9-6215. A  
**House**, 4-bdrm., 2 baths, cpts., dps., bltin stove, dble. gar., patio, fenced, 6 miles from Nor. Anaheim, \$25,700. La Habra, 691-8181. A  
**House**, 3-bdrm., lge. den, near schl. & fwy., bkfst. bar, fenced playyard, 90% loan avail., \$22,500. Gardena, 329-2904. A  
**Snow Skis**, 6' 3" metal, Fischer-made, used 6 times, \$40. Lynwood, 632-8696. A  
**Trimmer-Lawnmower**, 20", hvy. duty, 3 h.p. chain driven, cost \$245, \$175. Rossmoor, 430-1492. A  
**Trailer Home**, newly dec., cpts., dps., completely furn., 35' x 8' w/2-room ext., \$3,900. Hawthorne, 644-1615. A  
**Ski Boat**, 14' utility-type, trailer, 30 h.p. eng., \$380. Inglewood, OR 1-8672. A  
**Volkswagen**, 1959, r/h, new uphol. & paint, \$630. Inglewood, 645-7877. A

**For Sale**  
**Mercedes Benz**, 1958 190 SL rdstr., new int., AM/FM, Michelin tires, \$1,400. L.A., 476-3180. A  
**Cruiser**, 25' Owens Express, 1960, lapstrake, sleeps 4, galley, dinette, bait tank, trim-tabs, 185 h.p., SS radio, \$3,500. Inglewood, 677-1826. A  
**Encyclopedia**, Britannica, 24 vols., plus 7 yearbooks, \$150. Inglewood, 757-2955. A  
**Runabout**, 16' w/75 h.p. Scott o/board & trailer, \$1,000. Hawthorne, OR 7-6498. A  
**Oldsmobile**, 1959 Dynamic 88, new paint, \$400. Inglewood, 679-9891. A  
**Projector**, 8mm Keystone 105, 500/750 watt, cost \$120, \$45. Lakewood, ME 3-3993. A  
**Wanted to Buy**  
**Car Bed**, infant's, preferably in washable fabric, must be in good condition. Redondo Bch., 370-9795. B  
**Tapes**, paper Morse code for TG-34A keyer. Manhattan Bch., FR 4-5133. B  
**Fish**, full-grown young male oscar, Chiclid family. Hawthorne, 675-6978. B  
**Austin Healey Sprite**, 1965, stock, in good condition. Whittier, 695-7495. B  
**FREE (To Be Given Away)**  
**Bird Dog**, English or Irish setter, 1 yr. old. Lakewood, HA 9-7772. D  
**Rentals Offered**  
**Apt.**, 1-bdrm., furn., fireplace, 1/2 block to ocean, closed gar., adults, \$140 mo. Redondo Bch., 378-7905. E  
**Apt.**, 3-bdrm., 2-bath, pvt. dble. gar., encl. patio, f.a. heat, air cond., bltins, family rm., cpts., dps., lge. fireplace, lease \$175 or rent \$180. Fullerton, 525-4028. E  
**Home**, 3-bdrm., 2-bath, Valley View, minutes from Ventura plant, \$165. Thousand Oaks, 805-495-8797. E  
**Apt.**, 2-bdrm., unfurn., cpts., dps., bltins, pvt. patio, closed gar., children OK, \$125. Torrance, FR 5-0867. E  
**House**, 3-bdrm., 2 baths, cpts., dps., stove, 2-car gar., gardener service, \$200 mo. Gardena, 327-1131. E  
**Apt.**, 2-bdrm., furn., lge. pool & patio, closed gar., near El Camino, adults, \$140. Torrance, DA 9-5986. E  
**Exec. Apt.**, 2-bdrm., 2-bath, 1,600 sq. ft., lux. features, \$200 mo. Inglewood, 670-6084. E  
**Owner's Apt.**, unfurn., 3-bdrm., 2-bath, 2-car gar., family rm., bltins, fireplace, pvt. patio, f.a. heat, cpts, dps., near Northrop, \$225 mo. Panorama City, 892-6622. E  
**Apt.**, 2-bdrm., cpts., dps., bltins, disp., closed gar., 5 min. to Nort. P.V., 20 min. to Norair, \$125 unfurn.; \$145 furn. Torrance, 375-2091, 375-9397. E  
**Rentals Wanted**  
**Room**, for working woman, pvt. bath w/tub, downstairs. Box 402. F  
**Child Care Wanted**  
**Babysitter**, in my home, own transportation, 2 children, 4 & 6 yrs. Gardena, 323-8165. H  
**Lost**  
**Wallet**, woman's, black. Torrance, 835-5708. J  
**Ring**, ladies' 10-carat gold, black onyx w/diamond chip, reward offered. Gardena, 327-0964. J  
**Personals**  
**To our many friends** at Northrop: we cannot show our appreciation & thanks enough for the many gifts, flowers, & kind expressions during our bereavement. CLAUDE & NICK MILLER. L  
**Want** 2 bachelors to share expenses & rent in 3-bdrm. home. Torrance, 371-1490. L  
**Working** girl to share home, kitchen privileges, lge. bdrm., \$50 mo. Garden Grove, 539-1325. L  
**Transportation** to Norair Medical Center from vicinity of Imperial & Hawthorne. Hours to suit driver. Hawthorne, 676-4321. L  
**We wish to thank** all the many friends at Northrop for their kind expressions of sympathy in the passing of my mother. DON SCHULKE & FAMILY. L  
**My family joins me** in thanking our Northrop friends for their kind expressions of sympathy at the loss of our son. It was deeply appreciated. J. D. MORGAN. L  
**For Sale or Trade**  
**Lot**, lge., corner, in Apple Valley, \$2,000 equity or trade for travel trailer or car. Gardena, 327-9635. M  
**Surfboard**, Lyman, 8' 6", 22" wide, \$45 or trade for mini-bike. Hawthorne, 675-2761. M  
**BMW**, 1958 R60, \$700 or trade for utility jeep. Anaheim, 535-3723. M  
**Acreage**, 5-acre bldg. site near Rosamond, \$3,450 or trade for car or \$1,000 for equity, bal. payable \$30 mo. incl. 6% interest. Torrance, FR 8-1026. M  
**Onan 5KW**, 175 amp., 32 VDC, gen. driven by 2-cyl. gas. air-cooled eng., portable, cost approx. \$800; \$175 or trade for guns or truck. Manhattan Bch., 379-3487. M  
**Free Bowling Set**  
Here's a treat for NRC bowlers in the Hawthorne area — free instruction and free bowling at Southwest Bowl on special dates.  
The time is 1 to 3 p.m., March 25-26; April 1-2 and April 8-9.

**Rides and Riders**  
**Rides Wanted**  
**7 a.m. — 3:42 p.m.**  
**Lakewood Blvd. & Imperial Hwy.**, Downey. Morris Brown, Norair, ext. 2630, 2042, TO 1-8508.  
**Pico Blvd. & Santa Monica Fwy.**, Santa Monica. Richard Fleckenstein, Norair, ext. 2797, EX 8-4504.  
**8 a.m. — 4:42 p.m.**  
**Leutweiler & Leffingwell Rd.**, E. Whittier. Ernest J. Keraly, Norair, ext. 2563, 944-5946.  
**Rosecrans & Denker**, Gardena. Jodee Parker, Norair, ext. 4720, 323-8165.  
**Prairie & 102nd**, Inglewood. Mary Lou Weiss, Norair, ext. 1982, 674-5860.  
**8 a.m. — 4:45 p.m.**  
**Corona to Anaheim**, Orange. Karen Jackson, Nor. Anaheim, ext. 557, 637-7073.  
**Rides Offered**  
**8 a.m. — 4:42 p.m.**  
**Leutweiler & Leffingwell Rd.**, E. Whittier. Ernest J. Keraly, Norair, ext. 2563, 944-5946.

Annual Gem Club Show Scheduled

Members of the Northrop Gem and Mineral Club will have an estimated 60 showcases filled with minerals, fossils and gemstones on display next weekend in the group's eighth annual show. It will be held from 10 a.m. to 10 p.m. Saturday, March 11, and 10 a.m. to 6 p.m. Sunday, March 12, in Hawthorne Memorial Center, 3901 W. El Segundo Blvd., Hawthorne.

The group, largest of all NRC clubs, has invited exhibitors from throughout the western states to participate in the theme, "Gemland Heritage."

"We've set up the show to appeal to the public as well as the avid rockhound," club spokesman Ken Potter of Nortronics Hawthorne said.

"Demonstrations of lapidary, faceting and silverworking techniques will be presented on both days, and a wide variety of native, slabbed and polished gem materials will be available.

"A rockhound campsite exhibit is included, to acquaint the public with the gear, tools and vehicles used by weekend gem and mineral enthusiasts."

The club includes Northrop employees from Norair and Nortronics Hawthorne and Palos Verdes. Northrop Ventura and Nortronics Anaheim also have gem and mineral clubs.

Admission to the show is free.

Shakespearean Play Tickets Available

Reserved seat tickets for the March 10 performance of the National Shakespeare Company of New York's presentation of "Much Ado About Nothing" are available through Personnel Activities at Norair.

The 8:30 p.m. show will be at Rice Auditorium, Leuzinger High School, Lawndale.

Ticket prices are \$2 and \$1.50.

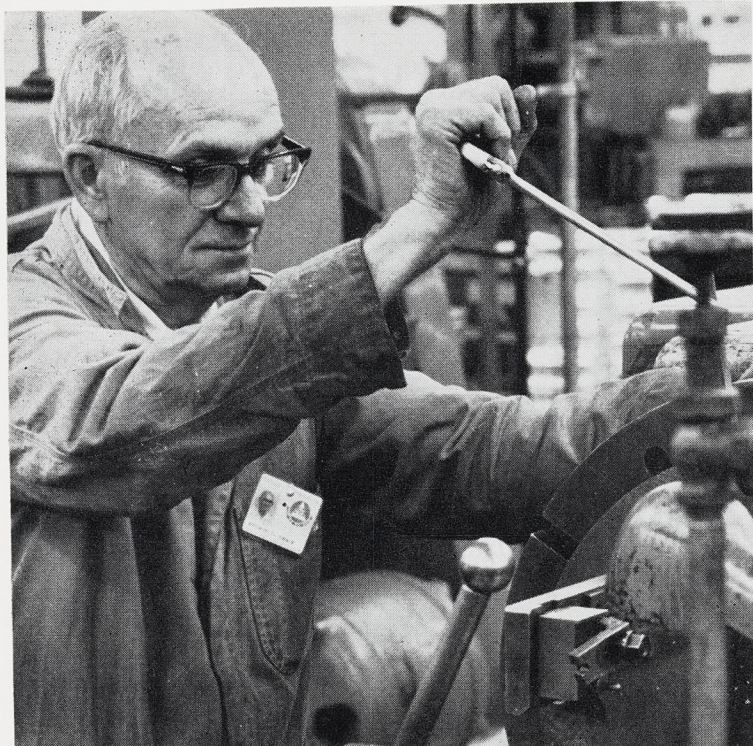
This is a return engagement of this national troupe arranged under the auspices of the Fine Arts Association of Centinela Valley.

'April Fool' Dance Planned by NRC

An "April Fool" dance Saturday, April 1, will kickoff the 1967 social season for Northrop personnel in the Hawthorne complex.

The hours are 9 p.m. to 1 a.m. The \$2.50 per person tab covers all fun and liquid ingredients for those turning out at NRC Clubhouse. Hawthorne.





**"MAN FOR ALL SEASONS"**—Kenny Soukup, a general machinist at Nortronics Anaheim, is known for his versatility and ability to operate any type of machine—and operate it well. This versatility enables Nortronics to work simultaneously on many programs.

## VERSATILITY PAYS

### Kenny Soukup—Machinist

In an era that emphasizes the specialist, Kenny Soukup is a paradox.

He could be a specialist, an outstanding one.

He has the experience, training and dexterity to specialize in his field. Yet the very fact he is so well-versed and capable makes him a logical choice for the work he does.

Mr. Soukup is a general machinist at Nortronics Anaheim.

There are other general machinists at Anaheim. Their ability to switch assignments, operate any type of machinery, carry out any assignment well, enables this most diversified of Northrop divisions to work simultaneously on many programs, many products.

Kenny Soukup has been a machinist all his life although he has taken time out to serve in supervision. He has never entertained an idea of another career. He likes working with his hands, with machinery.

For the past 15 years Mr. Soukup has served at Northrop. Prior to this time he was a machinist with some top industrial firms in the Midwest and California.

He now operates any type of

machine. He is also skilled in basic design related to tooling and machine operations. He can make tools, jigs and fixtures and do setup work.

More than anything else Kenny Soukup likes a challenge, a job that will enable him to employ all of his skills. He is in his element when given only a basic idea or concept and asked to produce.

Pete Falk, Machine Shop general supervisor, has this to say of Kenny:

"He is a perfectionist who can do anything well. He likes to exercise his imagination, to think something out, then do it. We know that any job he tackles will be done quickly and correctly. Kenny is a true craftsman of his old school."

Kenny Soukup works now on special assignments and re-work. He has the deft touch to convert a possible reject into an acceptable component. He requires a minimum of supervision at any time.

Kenny Soukup traces his love of machinery, of working with his hands, to his father who was a tool foreman.

## 'HOMECOMING'

### F-5 Returns From Vietnam

(Continued from page 1)

test pilot, brought the F-5 down to Hawthorne. He flew low over the Hawthorne Municipal Airport runway, executed a fighter approach and settled the little fighter down gently. He rolled to a stop and turned using just 3,000 feet of the 5,000-foot runway.

Along the edge of the airport and from vantage points crowds watched the arrival. Cameras from many news media captured the event on film.

The F-5 was towed into a special display area in the middle of the Norair complex where it remained on static display from 11 a.m. to 9 p.m.

Among those who welcomed the F-5 home were two special groups.

One was made up of 22 Norair employees selected at random to represent the many departments and functions that had

contributed to preparing the "Skoshi Tiger" squadron for duty.

They were Northrop's official welcoming committee.

Also on hand were three Air Force pilots who had flown this particular F-5 in combat action in Vietnam. Lieutenant Colonel Alfred H. Hopkins, a former commander of the "Skoshi Tiger" squadron, Lieutenant Colonel D. L. Carpenter, and Major Richard Williams, talked with employees and news media representatives at the display.

Their comments were interesting. While each expressed himself differently, all agreed on one point—this F-5 had a reputation for reliability, for being ready, and for performing commendably time and time again.

A series of detailed tests is in progress on the F-5 at Norair. They are standard for high performance aircraft.



**FABRICATING HAWK COMPONENTS** for launchers and loaders after an extended period was made easier at Nortronics Anaheim by men such as these. All had worked in making components during previous production effort,

and brought their extensive experience to the new program. Men represent Machine Shop, Welding, Processing and Paint operations and Quality Assurance.



**OUT ON THE HAWK LINE**, where assembly operations are in progress, are many others who worked on previous Hawk launcher and loader programs, including this group. They made it

possible to swing into production with a minimum of delays, due to their capability, experience and know-how. Photos by Roy O'Brien.

## HAWK

(Continued from page 1)

in April or early May. And in assembly the 121-man peak is expected to come shortly thereafter.

The current effort is primarily a production operation and as such falls under the direct supervision of Mr. Schultz and Grant Gunderson, chief of Production.

## Doubles Tourney Set for Bowlers

Nortronics Anaheim's bowling legions will stage their annual Scotch Doubles Tournament April 2 at Carter Bowl, Fullerton.

Squad times will be 10:30 a.m., 1:15 and 4 p.m. Entries close March 29. Entry forms are now available through Personnel Activities.

This event, which allows a male and female bowler to roll alternately, will feature trophies for the first four places, plus other awards. Each man-woman team will bowl six games with scores calculated to handicaps.

## Scouts Visit Anaheim For Safety Briefing

Boy Scouts from Troop 62 of Yorba Linda were visitors to Nortronics Anaheim recently as part of their work toward earning merit badges in safety.

Alvin Van Der Most, safety engineer, guided the youngsters on a special tour, acquainted them with Nortronics safety operations and answered questions.

Nortronics' Paul Armstrong is chairman of the troop, and Don Swanson, also of Nortronics, is district Boy Scout chairman.

## NORTRONICS WOMEN'S CLUB READIES SPRING FASHION SHOW-LUNCHEON

"Color Me Springtime" will take members of the Nortronics Anaheim Women's Club and their guests down a brilliantly hued fashion pathway March 18.

That's when the club's spring Fashion Show will be presented at the Golden Pheasant Restaurant, Anaheim. The time is 12:30 p.m.

The \$3.75 a person tab includes luncheon and the fashion

show. Tickets may be obtained through Personnel Activities.

Nortronics employees will serve as models for the latest creations from Bowne's of Fullerton; Clarice Sportswear and Cotler's of Anaheim; and the Casa de' Lingerie at the Disneyland Hotel.

Mrs. Rebecca Harkey, club president, invites all employees, their friends and guests to attend.



**"COLOR ME SPRINGTIME"** Fashion Show March 18 will feature this group of models and others from Nortronics Anaheim. Tickets are now on sale at Personnel Activities. Shown with a sampling of the latest creations to be revealed are (from left) Betty Davis, Donna Swanson, Donna McClymont, Alice Roth, Donna Robinson, Alva Kook and Leo Vasquez.



# NORTHROP NEWS

NORTHROP NORTRONICS

Published biweekly by Northrop Corporation, Beverly Hills, California

Vol. 25, No. 5

March 15, 1967



*MAKING THE GRADE, in this case, a 60 per cent one, is all part of the job for Nortronics' Gil Guevara, a Product Assurance inspector. Mr. Guevara drives Hawk loaders, like the one*

*above, until they have accumulated eight miles, including operation in reverse, around turns, and up and down grades. Mr. Guevara has been with Nortronics since 1962.*

## DRIVING THE HAWK LOADER

### Gil Guevara—Makes Freeways Look Easy

An eight-mile drive to most motorists is just a lark.

To Gil Guevara it is something else—grinding stops and lurching starts, forward and back, uphill and down, round and round.

Mr. Guevara is a Quality Assurance inspector at Nortronics Anaheim.

Part of his job is logging a required eight miles of driving time aboard Hawk loaders prior to delivery. At least two of those miles must involve operating in reverse.

Gil Guevara doesn't go anywhere in this assignment, just round and round a parking lot. But there is a method in his or-

biting.

He performs a series of prescribed maneuvers like sharp turns, sudden stops, quick take-offs and that bit about driving backward.

Then there is the trip to the pit.

The distance is only a half-mile, roundtrip. The pit, however, is an eye-opener, a deep hole with ramps set at certain angles. Mr. Guevara descends into the pit, then climbs out, at one angle with dummy missiles loaded and a steeper angle empty.

Throughout his drive Mr. Guevara keeps sensitive ears tuned to his vehicle. Over the purr of the engine and the whir of the tracks

he can detect, then pinpoint, rattles, squeaks, and so forth.

This allows minor adjustments to be made as he goes over the vehicle from stem to stern in final inspection, checking for leaks in new engines, hydraulic, fuel and oil lines.

Gil Guevara is ideally suited for his driving—inspecting chores due to his other duties.

He's the only inspector on the entire loader assembly line.

Which means he follows each vehicle from the time the first components are assembled to completion. Gil Guevara also works the Hawk launcher line and helps in final checkout of launchers, if needed.

Despite his rather unusual status and assignment, Gil Guevara is more or less typical of many inspectors, both men and women, at Anaheim. This versatile, tal-

(See GUEVARA, page 6)

## Travel Clubs to Offer South Pacific Tour

If you have ever wanted to visit the South Pacific, Northrop Travel Clubs are offering the opportunity.

From November 3 through 27 the Clubs will stage a group tour for \$1,129, including air fare, hotels, sightseeing and two meals each day.

The agenda includes New Zealand, Australia, New Caledonia, the Fiji Islands, Tahiti, Moorea and Bora Bora.

At 7:30 p.m., March 29 an organizational meeting is planned for NRC Clubhouse, Hawthorne.

## Rugged Environment Tests No Problem for TEAMS Unit

One of the U.S. Navy's newest and fastest electronic troubleshooters—designed and built by Nortronics—has emerged from an intensive seven-month test program without a single accountable failure.

Having successfully proven its reliability under such environmental extremes as heat, cold, salt spray, shocks up to 190 g's, heavy vibration, humidity, inclined operation and intense noise, a Northrop Nortronics TEAMS (Tactical Evaluation and Monitoring) unit is being readied for more of the same.

This time, testing will be of components and smaller systems, rather than the complete unit.

The pre-production TEAMS unit, which is the object of a complete Reliability and Qualification test program, was returned to Nortronics Anaheim from environmental laboratories at Northrop Norair and Hughes Aircraft Company. It was at Hughes for two weeks for inclination and shock impact tests, ranging from 150 to 190 g's, and it was at Norair for 6½ months for the extreme weather tests.

These man-made abuses are related to harsh operating conditions under which an operational unit may have to function, although test program extremes are far beyond those ever expected to be encountered.

"We are extremely proud of this unit, not only because it completed this detailed test program without an accountable failure, but also because it will require only token minor repairs to restore it," said TEAMS Program Manager W. P. Van Ordstrand. "This certainly speaks highly of the skills employed in its design and fabrication."

TEAMS will become the U.S. Navy's fastest troubleshooter—an automatic checkout system to continuously monitor the readiness of long-range sonar, fire-control radar, navigation radar and air and search radar on each

ship. It is capable of monitoring up to 10 systems, but is being programmed initially to handle only this important group of ship-board systems.

TEAMS will be deployed aboard a new class of U.S. Navy destroyer escorts.

The pre-production TEAMS unit is scheduled for another series of design tests following the current refurbishing effort.

A decision is pending as to its next role.

Meanwhile, production TEAMS units are moving through Nortronics assembly lines at Anaheim. The first of these units is now slated for delivery in April.

## Mangurian To Manage DSSP Work

George N. Mangurian has been named program manager of the Deep Submergence Systems Project (DSSP) at Northrop Nortronics.

Nortronics is the systems engineering support contractor for the U. S. Navy's project.

Nortronics' DSSP work will be carried on at the division's Research Park facility in Palos Verdes. Work on this program previously was performed in Anaheim.

Mr. Mangurian has 38 years of experience in the aviation industry, 16 with Northrop Corporation. He holds bachelor and master's degrees from Massachusetts Institute of Technology and is the author of several articles and a text on aircraft structures.

During his career, Mr. Mangurian has played major roles in the development of the Northrop Flying Wing, F-89 Scorpion, Snark and T-38 Talon. He was director of the Technical department at the Norair Division for several years.

In 1962, he joined Northrop Systems Laboratories as manager of applications engineering and planning. Most recently he was program manager for the Launch Phase Simulator built for NASA's Goddard Space Flight Center.

## Disneyland Outing Planned for April

Northrop's annual "Night at Disneyland" will be held this year on April 29, Northrop Recreation Councils representing all divisions have announced jointly.

Tickets for this event are available at NRC outlets. They sell for \$3.75 each and entitle the holder to admission and use of all facilities, rides and attractions between 8 p.m. and 1 a.m.



Mr. Mangurian

## FOR POSEIDON

### Checkout System Delivered

The first significant element of equipment which will automatically check combat readiness of the Navy's Poseidon missile has been delivered by Northrop Corporation.

Northrop's Nortronics Division said the equipment has been accepted by the Lockheed Missiles and Space Company, Sunnyvale, and will be tested and integrated with other sections of missile checkout equipment during the development stages.

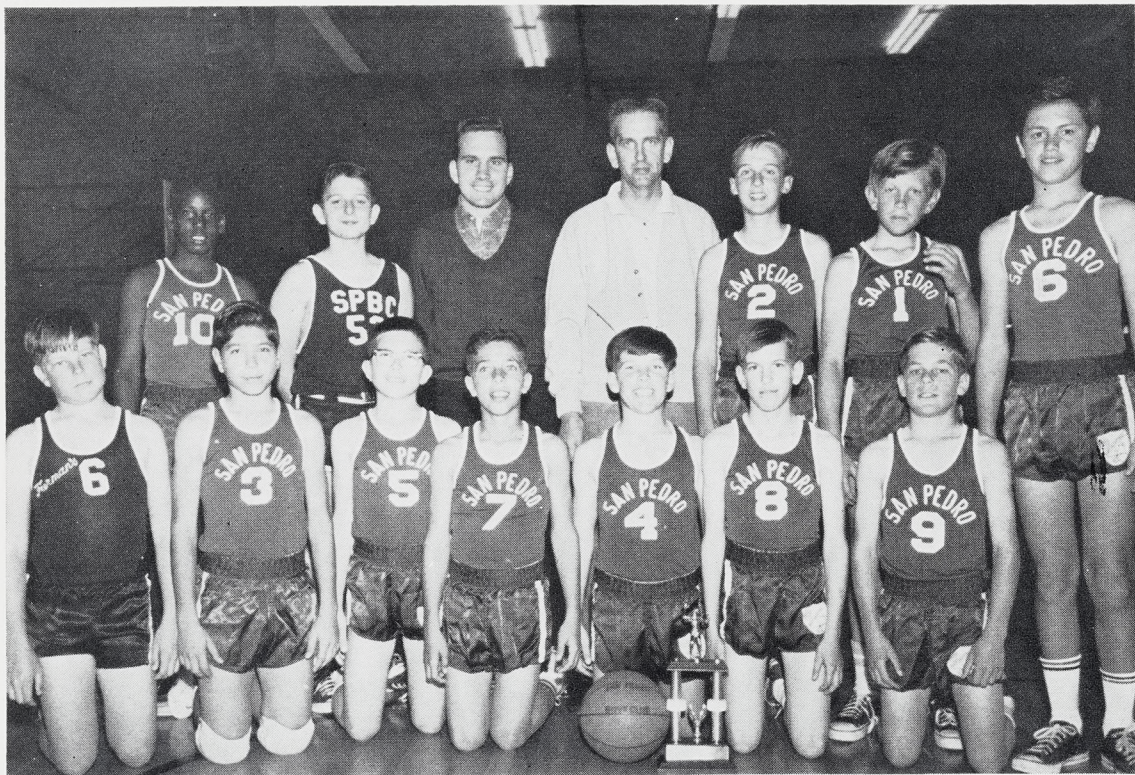
Nortronics is developing the automatic test and readiness equipment under a contract in excess of \$10 million, awarded by Lockheed-Sunnyvale.

The first hardware was delivered to Lockheed three weeks ahead of schedule.

Lockheed accepted the checkout system as a zero-defects item. Satisfactory demonstration tests were also conducted for a Navy representative from Lockheed-Sunnyvale.

The first system produced by Nortronics did not include certain subsystems which are peculiar to the Poseidon missile and are currently in the design phase. The system, designated a Mark 7, Mod-1, is similar to those Nortronics produced for all Polaris-armed nuclear powered submarines.





A CHAMPIONSHIP TEAM — Harry Lauder (light sweater), Northrop Norair proposal engineer, poses with the youth basketball team he coached this year. His team had a 19-1 record in the regular season, and then won the state

title, earning a place in an international tournament to be held March 30 through April 1 in San Juan, Puerto Rico. With Mr. Lauder is Tom Trani, who assisted him. Mr. Lauder's son, Randy, wears jersey number 8.

## COACHED BY NORAIR MAN

# Puerto Rico Trip Set for Basketball Team

While All-American Lew Alcindor and his UCLA teammates are receiving most of the local headlines in basketball, a Norair proposal engineer is making plans to take his state champions to an international tournament this month in Puerto Rico.

The Norair man is Harry Lauder, and his team is the San Pedro all-star squad of the Biddy Basketball Association, which is to basketball what Little League is to baseball. Mr. Lauder said, "this is the finest basketball program for boys 9 through 12 that I have ever seen."

The Biddy program differs from other basketball programs in that the physical dimensions of the game are scaled down to be proportionate with the boys' smaller size. Baskets, normally 10 feet high, are only 8½ feet from the floor. The ball is two inches smaller in circumference than a regulation basketball, and the free throw line is 12 feet from the backboard, instead of the stand-

ard 15 feet. The court is normal-sized.

Another Norair man active in the program is Bill Ruddy, chief of Division Proposals. He and Mr. Lauder both coached the Cross Pharmacy team in the San Pedro Biddy League during the regular season, with a 19-1 won lost record. Winning the regular season title earned them the chance to coach the all-star squad.

The all-stars defeated Santa Monica, 52-42, on February 23, and won the state title with a 53-36 win over Chula Vista in a game played in San Diego on February 25. Winning the State Championship earned the San Pedro team the trip to Puerto Rico to compete in the international tournament.

The tournament will be held March 30 through April 1 in San Juan. Mr. Lauder's team, representing California, will be joined by others from Kansas, Illinois, Indiana, Louisiana, Puerto Rico, Pennsylvania, New Jersey and New York.

"The boys have a good offense against a zone, and an excellent zone defense," Mr. Lauder said. "When the opponents try to defend us man-for-man, we go into a three-guard, two-forward situation."

His latest project while drilling the team to keep it sharp for the tournament, is attempting to raise funds necessary to make the trip.

"Several parent groups have helped," Mr. Lauder said, "but we need about \$3,000 in all. The Boys' Club of San Pedro, which sanctions the league, is a non-profit organization and is not in a position to help us financially. Most of these boys are from lower-middle to upper-middle income families, and that's a lot of money to raise."

## Discounts Planned On Hallicrafters Radio Equipment

Arrangements have been completed with the Hallicrafters Company, Northrop's newest subsidiary, which will enable Northrop employees to receive substantial discounts in purchases from Hallicrafters' catalog of more than 50 commercial products.

A display of seven of those products will be installed this week in company cafeterias at Anaheim, Norair and Ventura.

Product literature and price lists are available at Industrial Relations outlets throughout the Corporation. Discounts to employees are in the 30 percent range on most products.

Most of the products in the cafeteria displays are from the Hallicrafters spectrum line, including five- and six-band radios, and AM/FM/shortwave portable receivers. Citizens band units and ham operator equipment also are available at discounts.

Additional information may be obtained from Harry Belcher at Anaheim, ext. 1092; Harry Clark at Hawthorne and Palos Verdes, ext. 301; D. D. Archer at Ventura, ext. 513; Bob Weiss, at Corporate ext. 248; and Norair Personnel Activities, ext. 2486.

# New System Speeds Work In IDEP Report Program

Northrop Component Data Centers on the West Coast are in the process of completing installation of a unique storage and retrieval system for use with the Interagency Data Exchange Program (IDEP). IDEP is a joint Army, Navy, Air Force, NASA, contractor service chartered by the assistant secretaries of the various services and the NASA assistant administrator, through which information on test and use of parts and components are interchanged. Approximately 200 firms in the United States and Canada participate in this program. They currently have in their files more than 15,000 individual reports.

Until the recent change, these reports were retained in microfilm card files and a conventional index was utilized. The new data system provides for conversion of the microfilmed card files to roll film and the conventional index to a Termatrix Retrieval System. Through the use of perforated master cards, color-coded and numbered, a grid outlined light table, a simple index, and a reader printer, part/component with given mechanical, electrical, and environmental may be researched to a report and the report read or reproduced within a matter of minutes.

"We now have for the first time a means for isolating a required report, without extensive expenditure of search time," says David Kessler, Northrop's IDEP representative.

Mr. Kessler, supervisor of Re-

liability Engineering at Nortronics, is one of 13 men elected from the participating IDEP organizations serving on IDEP's Contractor Advisory Board. Nortronics has and Norair and Ventura Divisions are in the process of adopting the Termatrix systems in use with IDEP, which is, in turn, a key part of each Component Data Center.

Because new IDEP reports are continuously received, roll film libraries are constantly growing. The master visual coincidence card file for the retrieval system is updated every 30 days to include the additional reports.

## New Bonds Sale to Start On May 1

The new Freedom Share U.S. Savings Notes will be offered to Northrop employees through payroll deduction, it was announced this week by Industrial Relations.

Only those persons who concurrently invest in Series E savings bonds are eligible to purchase the new notes, which provide an investment yield of approximately 4.74 percent when held to full maturity. That period is 4½ years.

Series E bonds provide the yield of 4.15 percent when held seven years. Interest on the Freedom Share, as with the Series E bonds, will be compounded semi-annually.

Freedom Share deductions are limited to \$1.08 for each \$1 deducted for Series E bonds. This applies to Northrop employees who are participating in the U.S. bond payroll deduction plan. The maximum monthly payroll deduction is \$81.

Total savings note purchases during one year may not exceed a maturity (face) value of \$1,350, according to regulations established by the U.S. Treasury Department.

Issuance of Freedom Share notes will begin on May 1. It was emphasized by the Treasury Department that the new notes are not intended to replace the regular payroll savings plan for Series E bonds, but rather are intended to augment the plan.

All employees who are enrolled in the payroll savings plan will soon receive further information on the Freedom Shares plan.

## Search Continues For Ex-Employees

Dean J. Snyder and C. L. Yarbrough have been found.

And so have nine other former Northrop employees, being sought by Corporate officials because they may be eligible for retirement or savings benefits.

But the whereabouts of six other former employees are still unknown. Mail addressed to them has been returned, unclaimed.

Still missing are Robert Bassett Hughes, Cecil A. Ferguson, V. E. Cull, Robert C. Peterman, W. G. Eastwood and C. C. Viljoen.

Anyone who may know where they are has been asked to contact Corporate officials at ext. 302.

## Scholarship Winner Plans Yale Studies

Gregory K. Parker, a senior at Los Angeles High School, has been named recipient of the first Northrop Achievement Scholarship, awarded under the auspices of the National Achievement Scholarship Program for outstanding students.

He is the son of Mr. and Mrs. James E. Parker of 1350 Carmona Avenue, Los Angeles.

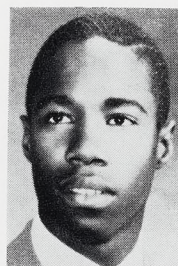
Now in its third year, the National Achievement Scholarship is administered nationally by the National Merit Scholarship Corporation (NMSC), which has conducted a competitive scholarship program since 1955.

Mr. Parker plans to enroll at Yale University for pre-medical studies. He is an Eagle Scout, a two-year letterman in swimming and president of his high school class. In 1965 he was named Hi-Y Boy of the Year.

## Dance Tickets on Sale

Tickets at \$2.50 each are still available for an NRC-sponsored April Fool's Dance to be held at 9 p.m., April 1 at NRC Clubhouse, Hawthorne.

The price includes all liquid and fun ingredients and chances for a door prize of a weekend for two in Las Vegas. Contact Personnel Activities outlets for tickets.



Mr. Parker



FOR 20 YEARS—Joseph A. Waldschmitt (left), president of Page Communications Engineers and a vice president of Northrop Corporation, receives his 20-year pin from Robert R. Miller, Northrop senior vice president. Mr. Waldschmitt was among the founders of Page in 1947. Page became a wholly owned Northrop subsidiary in 1959, and Mr. Waldschmitt was elected president of Northrop Page in 1961.



# Classified

Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private business are not accepted. The Northrop News reserves the right to edit or omit ads. Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 64. Ads are limited to one item and one ad per person each issue. Deadline is noon Wednesday, one week before publication.

## For Sale

**Chrysler 300**, 1965 4-dr. h/top, air, b/seats, new tires, brakes, \$3,100. Rolling Hills Ests., 375-7746. A

**Oldsmobile**, 98, 1963 4-dr., full power, factory air, \$1,750. P. V. Ests., 375-3225. A

**Stereo**, Panasonic 4-track solid state, model RS-7555, used twice, \$150. Torrance, FR 5-4987. A

**Dinette Set**, \$25. P.V., FR 7-6435. A

**Honda**, 1966 50 cc, step-through model, \$180. L.A., 384-2415. A

**Oldsmobile**, 1963 Holiday, 4-dr. sedan h/top, 8-cyl., p/b, p/s, auto. trans., r/h, fact. air, tilt steering whl., 4 new tires, \$1,500. L.A., 279-2696. A

**Drafting Machine**, Bruning, 18 & 24" arms, \$60. P. V. Pen., 377-3806. A

**Corvette**, 1962, 340 h.p., positraction, removable h/top, \$1,800. Hermosa Bch., 322-2544. A

**Refrigerator**, Philco elect., \$15. Hawthorne, 672-0749. A

**House**, 3-bdrm., 2 baths, bltins, dps., cpts., many extras, custom shutters, \$35,700. P. V. Pen., 377-5625. A

**Ford**, 1963 Galaxie 500 XL, new trans., \$1,100 Hawthorne, OS 6-0361. A

**Freezer**, 19 cu. ft., new motor & freezer unit, \$125. Lakewood, HA 1-5128. A

**Ford**, 1959 Galaxie, 2-dr., h/top, \$235. Inglewood, OR 2-3081. A

**House**, 4-bdrm., 2 baths, screened-in alum. patio, fireplace, bltins, dishwasher, Medallion bal. power, family rm., cpts., \$25,500. Torrance, 834-2175. A

**Refrigerator**, 3 cu. ft., for camper, butane, 12 or 110 volt, \$100. Rolling Hills, FR 7-3487. A

**Table Lamp**, colonial-style, maple trim, gold shade, milk glass base, \$6. Torrance, 371-1096. A

**Corvette**, 1962, 340 h.p., 4-spd., positraction, 2 tops, Michelin tires, mag style alum. whls., \$2,000. Lakewood, 634-8632. A

**Honda**, 1964 Scrambler 250 cc, \$375. Canoga Park, 883-2455. A

**Tires**, 3 775x15 b/walls, \$30. Torrance, FR 1-6758. A

**Cooperative Apt.**, 2-bdrm., upstairs, view, porch, kitchen, bath, furn., or \$12,200 unfurn., Inglewood, 678-6936. A

**Honda**, Scrambler, 1966 305 cc, low mileage, \$595. Inglewood, 677-3751. A

**Crib**, mattress, \$25. Lawndale, 644-3373. A

**Honda**, 1966, 305 cc, low mileage, fully equipped, \$550. Torrance, 370-2169. A

**Mountain Home**, near Lake Arrowhead, 2-bdrm., bltin kitchen, lge. living rm., fireplace, cpts., dps., \$20,850. Torrance, 326-9101. A

**Gas Analyzer**, for auto. exhaust, portable, \$35. Rolling Hills Ests., FR 5-8536. A

**End Tables**, lime oak, 1 round, 1 square, \$10 ea. Gardena, 323-3675. A

**House**, near Northrop, 3-bdrm., 1 1/4 bath, cpts., dps., newly decorated, heated pool, dble. gar., \$29,950. Inglewood, PL 4-0351. A

**Wig**, Italian hair, case & extras, worn 3 times, orig. cost \$325; \$150. Inglewood, 671-5576. A

**Sports Car Body**, fiberglass, \$25. Torrance, DA 6-8273. A

**Corvair Monza**, 1962 2-dr., 4-spd., r/h, new battery, \$500. Long Bch., GA 7-1418. A

**Clarinet**, Le Blanc Vito w/case & music, \$100. Torrance, 323-3586. A

**Power Mower**, Craftsman 18" reel-type, 3 h.p., self-propelled & Craftsman 1/4 h.p. elec. edger, \$100. Torrance, FR 5-3728. A

**Cemetery Lot**, Inglewood Park Cemetery, El Portal Sec., dble. interment, \$850. P.V. Pen., 377-1180. A

**TV Set**, RCA color, recently o/hauled, \$200. Wilmington, 830-0751. A

**Volkswagen**, 1966 1300, pushbutton radio, 8,000 miles, \$1,750. Compton, NE 2-7635. A

**Hi-Fi Enclosures**, equipment & speaker for 15" or 12" spkr., \$30. P.V. Pen., 377-9723. A

**Sofa**, convlt., yellow gold Naugahyde, 6' x 35" wide x 32" high, \$125. Gardena, 324-6702. A

**Mobile Home**, late 1963 Sahara, 12' by 60', 42' awning, 32' porch, \$4,750. Redondo Bch., 372-7860. A

**Falcon**, 1962 deluxe station wagon, 4-dr., r/h, Fordomatic, air cond., \$790. Torrance, 324-2992. A

**Piano**, Hallet & Davis, red maple wood, \$250. L.A., 645-1274. A

**Luggage Trailer**, enclosed, 4'x8', 5' high, steel frame, alum. body w/fabric covered top, spare tire, new paint, \$110. Garden Grove, 714-897-2962. A

**Boat**, fiberglassed wood, 14'2", new steering, anchor, rope & paint, no motor, 2-whl. trailer, \$200. L.A., 673-1707. A

## For Sale

**Motorcycle**, 1953 Triumph, 650 cc, chrome frame, \$800. Hawthorne, 672-1576. A

**Lot**, 1/2-acre bldg. site, horses OK, city water, elec. & phones, \$8,500. Newbury Pk., 805-498-3075. A

**Enlarger**, Durst 606, & photocopier, \$75. Arieta, 896-4543. A

**Bicycle**, boy's 26" midweight, 1 1/2 yrs. old, \$15. P.V., 377-4623. A

**Drum Set**, 4-pc. Crown, blue sparkle, 3 mos. old, \$160. Van Nuys, 781-3854. A

**Pups**, German shepherd, AKC, champion stock w/papers, black & tan, black & silver, & all black, wormed & had shots, \$50 & up. Lawndale, 675-6283. A

**Mini-Bike**, Taco 66, Briggs & Stratton eng., disc brakes, front & rear susp., 6 mos. old, \$90. P.V. Pen., 377-6202. A

**Manifold & Carbs.**, Chevrolet, 283 dual quad, \$60. Torrance, 328-6863. A

**Vacation Trailer**, all steel welded construction, sleeps 4, inclcs. 4 Polyfoam mattresses, \$125. Inglewood, 757-2955. A

**Mercury**, 1951, needs 6-v battery, \$40. L.A., 754-0078. A

**Studebaker**, 1961 Lark 6, 2-dr., auto. trans., \$400. Hawthorne, OS 5-4380. A

**Pickup**, 1957 Dodge, 3/4-ton, V/8 eng., 4-spd. trans., \$275. Long Bch., 423-4491. A

**Motor Bike**, 1961 Sears, \$35. Hawthorne, OS 9-6219. A

**Sewing Machine**, Necchi, complete w/all attachments, \$300 value, \$100. Lynwood, 537-1463. A

**Roll Bar**, for Corvette, chrome plated, bolts to frame, use w/hard or soft top, \$50. La Habra, 697-4927. A

**Honda**, 1966 305 Scrambler, 1,400 miles, \$600. Fullerton, 714-871-7287. A

**Band Saw**, Craftsman, 1/4 h.p. motor, \$20. Buena Pk., 827-6159. A

**Encyclopedia**, Standard 1964 edition, washable binding, cost \$350; \$150. Hawthorne, 676-5533. A

**Enclosures**, Roger-Charles folded-horn, 2.5 cu. ft., \$25. L.A., 732-4986. A

**Honda**, 1966 50 cc, low mileage, \$175. Hawthorne, 675-2761. A

**Chevrolet**, 1963 Impala, 8-cyl, p/s, 2-dr. h/top, \$1,100. Gardena, 324-0215. A

**Amplifier**, VM aux., \$25. Torrance, 835-5052. A

**Easy Chairs**, 2, \$20. Hawthorne, 679-7544. A

**Jumping Horse**, child's, \$8. Long Bch., 596-9748. A

**Cam**, Hi-Performance, \$15. Garden Grove, 714-539-9964. A

**Honda**, 1966 305 Scrambler, low mileage, \$625. Downey, TO 2-0656. A

**House**, 2-bdrm., cpts., dps., nat. wood cabinets, bltins, pullman bath, lge. yd., dble. gar., 10% dn. & assume loan, \$19,500. Inglewood, OR 1-8336, OR 1-5103. A

**Wheels**, for Chevrolet pickup, 2 w/o tires, \$7.50 ea., 2 w/General 6-ply tubeless tires, \$15 ea. Redondo Bch., FR 5-4553. A

**Aircraft**, 1966 Cessna 150 commuters, full gyro panels, 360 ch. radios, child's seat, many extras, Torrance based, \$6,750. Hawthorne, FR 8-6951, OS 6-6138. A

**Home**, 3-bdrm., 2 baths, dps., cpts., bltins, covered patio, 3 blocks from Calif. State College, \$24,500. Fullerton, 879-7076. A

**Ford**, 1959 4-dr. station wagon, auto. trans., r/h, 2 new tires, bat. & radiator, \$350. Anaheim, 637-6634. A

**Game Table**, 42" round, black Formica, adj., & 4 uphol. lounge chairs, \$175. Yorba Linda, 528-3517. A

**Lot**, lge., ocean view, unimproved, \$1,000 dn. or more at option of buyer, owner carry bal. at 6%, \$11,500. Rolling Hills Ests., 377-0146. A

**Slot Car Track**, 4 x 16 ft., for 1/32 & 1/24 scale 12-volt cars, transformers, controllers, other extras, \$50. Redondo Bch., 373-1465, 370-8036. A

**Trailer**, Kenskill, 1965, 23', self-contained, sleeps 6, inclcs. awning, frame, cabana, \$3,200. Altadena, 794-4043. A

**Ski Pants**, men's White Stag, black, size 28 short, cost \$30; \$17.50. Fullerton, 714-879-1447. A

**Guitar**, Rickenbacker, & Vox amp., 12-string, \$577. Lawndale, 676-7182. A

**Corvette**, 1961, fuel injected 283 cu. in. eng. recently rebilt., 4 spd. trans., Casler racing slicks, \$1,500. So. San Gabriel, 280-6566. A

**TV**, Olympic mod. CB207, 21", mahogany cabinet, 5 yrs. old, \$20. Gardena, DA 9-9982. A

**Engagement Ring**, center diamond, 60 pt. fine quality, paid \$416; \$350. L.A., OR 0-5084. A

**Pontiac**, 1966 GT0, fact. air, p/s, p/w, auto. trans. w/center console, \$3,195. Hawthorne, 644-2401 between 10 a.m. & 3 p.m. A

**Camper**, Alaskan, 8', extra cabinets, sleeps 3, \$950. Hawthorne, OS 6-3886. A

**Coins**, circulated to b.u., Lincoln & Jefferson, 1941 to date, many rolls, \$.80 roll & up. Torrance, DA 6-5558. A

**Honda**, 1965 CB 160, 5,300 miles, \$340. L.A., 294-1043. A

**Cruiser**, 17'8" raised deck inboard, 3/8" 5-ply boat plywood, fiberglassed, 4" channel trailer, 2 60 & 100 h.p. engs., \$295. Venice, 359-2005. A

**Chevrolet**, 1958 Impala, 348 cu. in., 4 bbl. carb., 3-spd. trans., new tires, Crager mags, \$700. Box 501. A

## NORTHROP NEWS

## For Sale

**Wrenches**, full set, Bonney, some never used, \$40. Inglewood, 679-7667. A

**Bicycle**, 24", boy's, \$20. Hawthorne, 329-4302. A

**Ford**, 1966 supervan, 6 cyl., new shocks, sink, stove, refrig., sleeps 5, many extras, \$2,750. Torrance, 371-8557. A

**Crib**, w/out mattress, infant seat, bathinette, other items, \$25 or sell sep. Redondo Bch., 379-3781. A

**Cabin**, in Running Springs, 2-bdrm., view lot, fireplace, lge. sun porch, 1/2 mile to town, \$14,250. Wilmington, 834-4184. A

**Ford**, 1937 pickup, \$97.50. Hawthorne, 644-2154. A

**Falcon**, 1964 Ranchero, 33,000 actual miles, \$1,125. Brea, 529-3531. A

**Outboard Motor**, British Seagull Century Plus, 5 h.p., long shaft, clutch, \$185. Garden Grove, 714-539-2098. A

**Radio**, Raleigh AM-FM-SW, walnut case, \$25. Gardena, 532-5086. A

**House**, stucco, 2-bdrm., 1,020 sq. ft., on 40 x 150 lot, fireplace, patio, fenced yd., 3/4 mile from Norair, \$19,900. Hawthorne, OS 5-5943. A

**Pickup**, 1959 Chevrolet 1/2 ton, \$350. Inglewood, 677-7382. A

**Dodge**, 1961 Polara D-500 station wagon, 9-pass., air cond., p/s, p/b, 383 cu. in. eng., \$845. Woodland Hills, 346-9701. A

**House**, 3-bdrm. & den, hdwd. floors, patio, 90% loan avail., 2-car gar., 9 min. to Norair Plant I, \$22,500. Gardena, 329-2904. A

**Ford**, 1958, Buick eng., Chev. 3-spd., b/seats, hydraulic lifts, \$450. Torrance, 864-0248. A

**Sewing Machine**, Kenmore portable, w/wood cabinet, all attachments, \$40. Santa Monica, 395-7368. A

**Engine**, 1958 Ford, 272 cu. in. w/auto. trans., all parts included except exhaust manifolds, rebilt. Ford radiator w/trans. oil cooler, \$60 or sell sep. Gardena, DA 4-9593. A

**Tables**, dk. wood, corner table, end table, & coffee table, \$35 or sell sep. Torrance, FR 5-5237. A

**Express Cruiser**, Chris-Craft, 30' twin screw, 75 W ship-to-shore, fuel tanks, 160 gal., 60 gal. water, many extras, \$5,400. Inglewood, PL 4-7861. A

**House**, 3-bdrm., G.I., no dn., 1 1/4 bath, cpts., dps., sprinkler system, \$24,950. Inglewood, PL 7-1224. A

**Chevy II**, Nova, 6 cyl., 2-dr. h/top, \$950. Gardena, 324-2784. A

**Sailboat**, 12' Snobird, new Dacron, racing geared, \$225. Manhattan Bch., 545-5298, 676-8833. A

**Corvette**, 1965, 327 cu. in., 365 h.p., Americans, 8 1/2" Goodyears, 4.56, Hurst, headers, AM-FM, \$3,400. Hawthorne, OS 5 1365. A

**Corvair**, 1962, body damaged, complete rebilt. eng., other parts, \$125. Hawthorne, 676-7109. A

**Datsun**, 1966 convt. 1600, 4,000 miles, fully equipped, \$2,100. Redondo Bch., FR 5-3257. A

**Surfboard**, 8' 10", redwood stringer, \$62. Torrance, FA 8-0460. A

**Formal**, yellow net, full length, \$2. Hawthorne, 675-3517. A

**Apt. Units**, furn., 5 1-bdrm., 5 2-bdrm., & house, 5-bdrm., 2 1/2 bath, Spanish design, will carry second T.D., \$148,000. Hollywood, HO 4-1084. A

**Roller Skates**, 2 pr., size 4 & 5, on shoes, \$4.50 pr., San Pedro, TE 3-3826. A

**House**, 3-bdrm., 1 1/4 bath, family rm., 3 1/2 yrs. old, landscaped, fenced, w/w used brick fireplace, patio, cpts., dps., bltins, 2 1/2-car gar., 1 1/2 mile to Ventura Div., 10% dn., \$22,000. Newbury Pk., 805-498-3043. A

**Cabin**, 5-room, 1,000 sq. ft., bltins, disp., f.a. wall furnaces, lge. fireplace, in Wrightwood, \$18,500. Thousand Oaks, 805-495-5967. A

**Top Boot**, for Chevelle, 1964 model, red, never used, \$35. Manhattan Bch., FR 6-4677. A

**Mountain Land**, 20 acres, near Shaver Lake, \$1,000 acre. La Palma, 714-826-0109. A

**Boat**, 12' Burchcraft, 7 1/2 h.p. motor, trailer, bumper hitch, \$200. La Mirada, WH 1-1865. A

**Beach Lot**, Oxnard Shores, all improvements in & paid, \$7,200 & terms 6% or \$6,800. Manhattan Bch., FR 4-3359. A

**Tables**, solid hard rock maple, 2-step tables & coffee table, \$45. Torrance, 371-1096. A

**End Table**, 24" dia. walnut, 4 legs, square shape, \$20. Hawthorne, OS 6-3792. A

**Stopwatch**, 1/5 second divisions, recently o/hauled, \$7.50. Torrance, 370-3752. A

**Motorcycle**, 1965 B.S.A., 175 cc, 1,900 miles, \$295. Inglewood, 672-1668. A

**Oldsmobile**, 1962 Super 88, p/s, p/b, p/b-top radio, htr., \$995. Torrance, 370-2962. A

**Home**, 2-bdrm., 3 blocks to Norair, cpts., patio, lge. fenced yd., fruit trees, landscaped, bltin auto. range & oven, \$21,000. Hawthorne, 679-6982. A

**Sloop**, Marconi rigged, 13' sails & trailer, \$250. San Pedro, 833-4820. A

**Sloop**, 14' Omega, tilt trailer, 3.6 h.p. water-cooled Scott o/board, \$725. Long Bch., GE 4-9134. A

**Trail Bike**, 1964 Honda, recently rebilt., 55 cc, knobby tires, \$125. Torrance, DA 6-48-8. A

**Pontiac**, 1962 Grand Prix, good tires, \$1,095. Downey, TO 9-2700. A

**Car Radio**, Motorola deluxe, 6 volt, \$15. Torrance, 375-1239. A

**House**, 2-bdrm., near Northrop, on lge. corner lot, w/w cpts., close to trans. & shopping, \$18,950. Hawthorne, 675-3145. A

## For Sale

**MGA**, 1960 roadster, new eng. & clutch, \$750. Box 502. A

**Coffee Table**, 3' x 5', extends to 7', solid oak, w/formica inlaid top, \$75. Fullerton, 714-525-1825. A

**Home**, 5 rooms, on corner, bath, dining & laundry areas, 2-car gar., fenced yd., patio, trees, cpts., dps., room for swim pool, \$24,500. Inglewood, PL 4-7618. A

**TV**, 21" portable, \$35. Gardena, 327-5588. A

**Acreage**, 1/2-acre in Latigo Cnyn., Malibu, trees & stream, 87' frontage, elec. & water avail., terms, \$8,700. Manhattan Bch., 379-3487. A

**Hi-Chair**, Cosco, blue plastic covered seat & back, chrome tray & legs, \$5. Rolling Hills Ests., FR 5-9689. A

**Tape Recorder**, Knight monaural, portable, \$45. Hawthorne, 675-6963. A

**Fiat**, 1963 1100D model, 4-dr., heater, \$375. Huntington Bch., 714-842-6720. A

**Volkswagen**, 1965 113 sedan, 1-owner, \$1,195. Inglewood, 755-1071. A

**Table**, French provincial, closed 19" x 40", expands to 86" long, \$40. Downey, 869-6186. A

**Bed**, Hollywood, single, mattress, box & casters, \$35. Redondo Bch., 374-1124. A

**Steel Guitar**, \$25. Torrance, 329-0669. A

**Surfboard**, Jacobs 9' 1", \$50. Inglewood, OR 7-2962. A

**Rambler**, 1958 4-dr., \$195. Lawndale, 676-7154. A

**Chevrolet**, 1965 Impala SS, 23,000 mi., auto. trans., r/h, p/s, \$1,995. San Pedro, TE 1-3045. A

**Oldsmobile**, Dynamic 88, 1959, r/h, \$400. Inglewood, 679-9891. A

**Washer & Dryer**, Kenmore, \$60. Hawthorne, OS 5-7740. A

**Corvair Monza**, 1961, 95 h.p., Powerglide, \$475. Huntington Bch., 714-962-3192. A

**Grandfather Clock**, provincial, maple, 21" wide, 78" high, imported Westminster chime movement, handcrafted case, \$150. Buena Pk., 828-7953. A

**Olds**, 1961 Holiday cpe., r/h, p/s, p/b, Premium w/s/w, \$850. Placentia, 528-8582. A

**Ford**, 1965 Galaxie 500 tudor, r/h, p/s, fact. air, auto., 26,000 miles, \$1,850. Long Bch., GA 3-1363. A

**Chevrolet**, 1956 4-dr. sedan, auto. trans., \$200. Gardena, 532-6016. A

**Fiat**, 1963 1200 roadster, good top, \$395. Gardena, 324-8613. A

**House**, 2-bdrm., cpts., R-2 lot, in Inglewood, \$18,950. Torrance, 378-4959. A

## Wanted to Buy

**Drafting Machine**, left hand. Fullerton, 879-2007. B

**Drafting Machine**. Bell, 213-773-8542. B

**Canopy** for Econoline camper, with or w/out poles. Box 503. B

**Station Wagon**, 1963 or '64, prefer Chrysler product or Chevrolet. Hawthorne, OS 6-7723. B

**Records**, French language. Torrance, 834-2845. B

## For Trade

**Lots**, mountain &/or desert resort, trade for equity in rental property. Gardena, DA 9-6728. C

**Machinist Gauges**, radius & depth; spray gun, Binks; p/sander, Sundstrand, mod. 1000; Stanley router, mod. R2-L, trade for pistol or rifle, .22 or .22 magnum, 16 or 20 ga. shotgun, generator, Go-Kart or drafting machine, Box 504. C

## Free (To Be Given Away)

**Dog**, Australian shepherd, needs large yard & good home. Redondo Bch., 370-0342. D

**Pups**, to good home w/fenced yd., 5-wk.-old German shepherd & collie. Hawthorne, 676-8960. D

## Rentals Offered

**Apt.**, 2-bdrm., unfurn., gar., fenced yard, 1 mile to Northrop, \$95 mo. Harbor City, 325-5705. E

**Apt.**, furn., 2-bdrm., 1 1/2 bath, cpts., dps., bltins, gar., \$155. Inglewood, 644-2565, 672-1890. E

**House**, 3-bdrm., 1 1/4 bath, mod. kitchen, family & laundry rm., hobby rm., fenced yd., patio, ocean view, dble. gar., \$275. Hermosa Bch., FR 2-1632. E

**House**, 2-bdrm., single gar., fenced yd., \$90 mo. Gardena, DA 3-5497. E

**House**, 3-bdrm., fireplace, cpts., paneling, lge. fenced yd., dble. gar., near beach, 15 mins. to Northrop, \$175. Redondo Bch., FR 6-1491. E

**Cabin**, Big Bear Lake, sleeps 7 to 9, \$21 w/end; \$60 wk. Bellflower, TO 7-0662. E

**Exec. Apt.**, 2-bdrm., 2-bath, 1,600 sq. ft., lux. features, \$200 mo. Inglewood, 670-6084. E

**Bachelor Apt.**, furn., upstairs, for 1 man, inclcs. water & trash, \$65 mo. Hawthorne, OS 6-5921. E

**Apt.**, 2-bdrm., cpts., dps., bltins, closed gar., 5 min. to Nortronics P.V., \$125 unfurn.; \$145 furn. Torrance, 375-2091, 375-9397. E

**Roommate** wanted to share 2-bdrm., furn., bach. apt., w/pool, 3 blks. Nortronics, \$70. Redondo Bch., FR 4-1509. E

**Apt.**, 3-bdrm., 2-bath, 3 blocks from King Harbor, cpts., dps., bltins, piped music, bltin vacuum, gar., \$155. Redondo Bch., FR 6-9608. E

**Cabin**, Green Valley Lake, \$30 w/end; \$55 wk. Torrance, 320-2002. E

## Rides and Riders

### Rides Wanted

7 a.m. — 3:42 p.m.

**Heil & Graham**, Huntington Beach. George H. Reed, Norair, exts. 1485, 1170, 1681, 842-3653.

8 a.m. — 4:42 p.m.

**York Blvd. & Eagle Rock Blvd.**, Los Angeles. Ramesh C. Taneja, Norair, ext. 1006, 254-7045.

**Walker & Conifer Dr.**, La Palma. F. St. Germain, Norair, ext. 2808, 2809, 714-522-2598.

**Goldenwest & Edinger**, Huntington Beach. Art Romero, Norair, ext. 2463, 847-7735.

8 a.m. — 4:45 p.m.

**Topanga Canyon, Fallbrook or Platt & Van-owen**, Canoga Park. Stanley J. Ehlinger, Nortronics, Haw., exts. 462-463, DI 8-3289.

**Montana & Veteran**, Los Angeles. Jean Berry, Nortronics, P.V., ext. 74-386, GR 3-3334.

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**Topanga Canyon, Fallbrook or Platt & Van-owen**, Canoga Park. Stanley J. Ehlinger, Nortronics, Haw., exts. 462-463, DI 8-3289.

### Rentals Offered

**Apt.**, 1-bdrm., 5 minutes from Northrop, all bltins, dishwasher, closed gar., lge. sep. laundry rm., \$150 mo. Box 505. E

**Apt.**, lge., 1-bdrm., cpts., bltins, gar., laundry, 15 mins. from Anaheim, \$89. L.A., 756-3096. E

**Apt.** 1-bdrm., unfurn., bltin range, cpts., dps., carport, near Northrop, \$90 mo. Hawthorne, 675-2075. E

**House**, 2 bdrm., unfurn., tile, h/wood floors, \$110. Lawndale, FR 8-0500. E

### Personals

**Windmill** wanted, free, to be used for charity village. Redondo, 371-0950. L

**My wife**, Billie & I, wish to thank all our friends at Northrop for the party & gifts received prior to our leaving for my assignment in Spain. E. E. NICKLES. L

**Words** cannot express our deep felt appreciation of the understanding of our friends at Northrop in the loss of our beloved husband, father & son, Ronald Stewart. Our sincere thanks for all your help, kind expressions of sympathy, cards, flowers & remembrances. DIXIE & MICHAEL SEAN STEWART, MARY WIEGERS, LETHA PETERSEN & ALL HIS FAMILY. L

**To** our friends at Northrop, we wish to send a heartfelt thanks for the wonderful messages, gifts & retirement party. JOE & ISABELLE AINGE. L

### For Sale or Trade

**Ford**, 1957 2-dr. sedan, 3-spd. stick, chrome rims, good tires, \$375 or trade for 900D truck. Anaheim, 774-6012. M

**Boat**, 13' wood w/fiberglass cover, Mercury Mark 25 eng., lge. wheel trailer w/new bearings & races, \$225 or trade for camping equipment or furniture. Simi, 805-526-7767. M

**Acreage**, 5 acres near Willow Springs, \$29.75 dn. & \$29.75 mo. 6% int., \$2,975 or trade equity for car. Torrance, FR 8-1026. M

**Condominium**, 4-bdrm., 2 1/2 baths, cpts., dps., 2-story, family section w/pool, \$119 pymt., \$24,950, dn. pymt. \$5,000 or trade equity for 24' wide, 2-bdrm., 2-bath furn



## British Technicians Learn To Operate Polaris '414'

Six British subjects are nearing the end of an intensive eight-week technical training program being conducted at Nortronics Anaheim.

Taking part are experienced engineers and electronic technicians from the United Kingdom's Civil Service ranks.

Ultimately, they will join the cadre of a British Polaris Support Depot similar to that operated at Nortronics Anaheim for the U.S. Navy.

The men are specializing in the operation and maintenance of the Polaris Mark 414 system designed and produced at Nortronics.

The Mark 414 is a high-speed automatic tester. It is utilized to

test components and systems comprising the automatic test equipment employed in operating and maintaining the Polaris weapon system. It provides a means of cycling spare drawers and sub-assemblies through maintenance and checkout routines at a much faster rate than is possible with conventional bench testers and other types of instrumentation.

Because the trainees are learning their subject "from top to bottom," they are dividing their time between classroom sessions and on-the-job work with the Mark 414.

Thus, they are adding to a broad knowledge covering the theory and maintenance of the Mark 414 such skills as production control, certification, shop operations, quality assurance and program administration as applied to operation of a Polaris Support Depot.

Ray Lowry, supervisor of Product Training in Product Support, is responsible for the training program. Don Dahl and Frank Caldwell are serving as instructors.

This is the second group of British subjects to receive Polaris training at Nortronics. Last summer 11 trainees attended a four-week course at Anaheim.

Nortronics has been providing specialized training in support of the Polaris weapon system program since 1959. In addition to classes taught at Anaheim, Nortronics Product Support instructors have taught courses to both military and civilian personnel.

### Tickets Available For Angels-Orioles First Doubleheader

The World Champion Baltimore Orioles make their first appearance of the new season at Anaheim Stadium April 16 and NRC at Anaheim has acquired a block of tickets just for Northrop employees.

This is a doubleheader beginning at 1 p.m.

The NRC tickets are located in the Terrace Box section along the third base line. They sell for \$3.50 each as long as they last. Only 150 tickets are available through Personnel Activities at Anaheim.



DISCUSSING POLARIS ELECTRONIC components at Nortronics Anaheim are six British trainees and their Northrop instructor, Frank Caldwell (right). Men are taking part in intensive training effort prior to establishment of a

United Kingdom Polaris Support Depot. Men are (from left) Fred Bernardin, Bob Clarke, Andrew Wallace, John Wilmot, Keith Wilson and Roy Noden.

## Sullivan Named Moderator of Plastics Meeting

Dr. George H. Sullivan, life sciences director at Northrop Nortronics, will be the moderator for a "Plastics in Hydrospace" symposium to be held next month in San Diego.

Dr. Sullivan, a member of President Johnson's Advisory Commission for Marine Science, Engineering and Resources, will moderate the group on April 27 at the Hotel del Coronado.

A five-man Navy team and a keynote speaker will participate in the meeting. The keynote speaker will be Harold Bernstein, chief of the Structures section of the Office of Naval Materials, Deep Submergence Systems.

Dr. Sullivan, considered one of the world's foremost life support authorities in the hydrospace field, also will discuss some of the aspects of the President's advisory committee.

## Anaheim Blood Drive Set for March 24

Nortronics Anaheim will hold its annual American Red Cross bloodmobile visit this year on March 24 with volunteer donors being recruited through March 20.

The bloodmobile will operate in Room 133, Building Y-2 between noon and 4:30 p.m. to enable personnel on two shifts to take part.

## Directors Named In Operations, Quality Assurance

Nortronics' Precision Products Department in Norwood, Massachusetts, has announced the appointment of Edmund M. Meagher and J. David Ledoux to director's positions.



Mr. Meagher

Mr. Meagher, who has been in the electronics industry for 15 years, has been named director of Operations. He will be responsible for Engineering, Manufacturing, Quality Assurance and Reliability, and Materiel.

Mr. Ledoux, who has been with Northrop since 1963, was named director of Quality Assurance and Reliability.

Mr. Ledoux, who is from Montreal, is a member of the Corporation of Professional Engineers of Quebec. Mr. Meagher is from Springfield, Massachusetts.



Mr. Ledoux

## GIL GUEVARA

### Driving the Hawk Loader

(Continued from page 1)

ented and dedicated group of people work tirelessly to see that only the best possible products roll off assembly lines.

Like other inspectors, Gil Guevara feels a deep sense of responsibility about his job.

"Letting a minor squawk pass helps no one—myself, the company or the customer," Gil says. "In the long run it all reflects

right back to you. So why not do it right the first time."

Gil Guevara came to Nortronics in 1962 after 12 years with Douglas Aircraft. He worked in a variety of assembly operations before joining Quality Assurance 18 months ago, experience he feels helps a lot when it comes to inspection tasks.

Ellis Lingle, Gil Guevara's supervisor, says:

"Gil is reliable, steady, hard-working and mechanically adapted. He can do almost anything and is not afraid to get his hands dirty on the job. And he goes looking for things to do. Above all, he is respected for his ability by all who work with him."

## Reservations Open For Las Vegas Trip

Reservations are still being accepted for an April 7-9 bus tour to Las Vegas and the Aladdin Hotel.

The tab is \$29 and includes roundtrip fare, two nights at the hotel, two breakfasts, one buffet and show admission at the hotel.

Reservations will be accepted through March 31 only at Personnel Activities office at Anaheim.

## Bridge Scheduled

Bridge buffs in the Hawthorne area may wish to enroll in a new series of lessons offered by NRC. Contact Charles Fuller, ext. 625, Nortronics Hawthorne, or Henry Griggs, ext. 4670, Norair.



CHANGE OF OFFICERS for Nortronics Management Club was completed recently when Pat Foster (left) passed on presidency to Tom Barry (right). Looking on is Frederick Stevens, Northrop vice president and Nortronics general manager.

Other incoming officers are Frank Morehouse, vice president; Dolson Smith, secretary; Bill Gramm, sergeant-at-arms; and Stan Hawkins, treasurer.



MEETING AT PALOS VERDES—Frederick Stevens, corporate vice president and Nortronics general manager, addresses members of the Deep Submergence Systems Project Industrial Public Relations Committee. The meeting was held on February 27 at Nortronics Palos Verdes. The group was organized by public relations officials of aerospace DSSP contractors to discuss and pool their resources on mutual activities.



# NORTHROP NEWS

NORTHROP NORTRONICS

Published biweekly by Northrop Corporation, Beverly Hills, California

Vol. 25, No. 6

March 29, 1967

## Tribute Paid To Vietnam War Hero

Memorial services followed by burial with full military honors paid tribute to the son of a Northrop family who died in Vietnam while attempting to save the lives of others.

He was Phillip H. Johnson, 20, son of Mr. and Mrs. Lee Johnson.



Private Johnson

Mr. Johnson is a veteran Northrop employee and Norair's chief safety engineer.

Mrs. Johnson works in the Nortronics Palos Verdes library.

Army PFC Johnson served in Vietnam as crew chief aboard a medical evacuation helicopter. His craft was hit by enemy ground fire as it took off at night after picking up seriously injured combat soldiers from a forward position. It crashed, claiming the lives of all aboard.

Private Johnson entered the Army in 1965 and went to Vietnam last October. He asked for the dangerous evacuation assignment after a brief period of service as a helicopter mechanic.

Funeral services were held at St. Andrew's Presbyterian Church, Redondo Beach. He was buried with full military honors in Green Hills Memorial Cemetery.

Surviving are his parents and two brothers, Terry and Bruce.

## Boat Club Studied

Boat owners are being sought at Nortronics Anaheim to take part in a proposed NRC-sponsored activity.

Prospective members are invited to leave their name with Personnel Activities office.

## SIZE IS NO PROBLEM

### Jack Kelders—'Big Man' at Anaheim

Would you believe that a man who weighs just 115 pounds and stands 4 feet, 10¾ inches tall, has a penchant for the most physically exerting jobs.

Jack Kelders fits these dimensions.

But his size has not prevented his holding jobs such as: longshoreman, store clerk, ditch digger, butler, chauffeur, store manager, trunk factory hand, milk distributor, stock clerk.

For the past 14 years Mr. Kelders has been a stock clerk at Nortronics Anaheim.

He works in Materiel Stores.

His slight frame is a familiar sight hustling about among stock bins stretching floor-to-ceiling, row on endless row. He lifts, carries and moves heavy and bulky loads with the best of them, asking no quarters, receiving none.

Jack Kelders works with five equally-busy fellow stock clerks. They receive and disburse parts, hardware, components and raw materials to feed hungry assem-



*ZOOM IN ON A TARGET—A film viewer capable of magnifying images up to 70 times has been produced by Northrop Nortronics. The Model 100, which uses the Nortronics zoom lens, allows images to be magnified from three to 70 times their normal size. See story on page 4.*

## YOUTH LEADERSHIP PROGRAM A SUCCESS

An initial "Youth Leadership" program for teenagers (13-18) has proven so successful at Nortronics Anaheim that reservations are now being accepted for a new program tentatively set to start in mid-May.

Toastmasters International and NRC have teamed to conduct this program which teaches youth to

speak, carry on discussions and conduct meetings.

Meetings are held from 6 to 8 p.m. each Friday over an eight-week period at NRC Clubhouse, Fullerton.

Contact Personnel Activities at Anaheim to register youngsters for the next session.

## ALOTS Units Earn Praise Of Test Range Commander

Nortronics' Airborne Lightweight Optical Tracking System (ALOTS) has proved "very successful" at the Air Force Eastern Test Range.

Maj. General Vincent G. Huston, commander of the Test Range, made this comment in a speech last month at a seminar co-sponsored by the Society of Photo-Optical Instrumentation Engineers and the Air Force Eastern Test Range.

General Huston first introduced the system as "one I am involved and interested in (and which) is undoubtedly familiar to almost every one of you. I refer to ALOTS, developed for the Air Force by the Nortronics Division of Northrop Corporation.

"In a number of tests," General Huston said, "both here and on the Western Test Range, ALOTS proved it could lock onto the missiles and track the leading edge, rather than the exhaust, of the vehicles. This, plus the fact that it operates above the distortion of about 75 percent of the earth's atmosphere, was one of the biggest selling points of the system."

These remarks were particularly gratifying to the ALOTS team which developed the system. Working with Project Manager Dave Conklin, the collective effort of these engineers and technicians made possible the success of ALOTS.

Now that the first system has been accepted and has proved its worth, additional units are being planned, General Huston noted.

"Four of the eight Apollo Range Instrumentation aircraft being phased in later this year will be equipped to carry the system," he said. "These instrumented versions of the C-135 aircraft will be fully operational

on the Range by January 1968."

In addition to supporting the Apollo lunar missions, ALOTS will also be used on ballistic missile and non-Apollo space programs. For these and other programs, further improvements are planned for the system.

"You will be hearing much in the future about advanced ALOTS," General Huston said. "Improvements under consideration here are focal length modification, improved focusing technique, exposure control, electronic imaging techniques and turbulent boundary layer control, to mention a few."

## Navigation Systems Topic for Seminar

Northrop Nortronics held a seminar at the Airport Marina Hotel recently to acquaint division personnel with various aspects of the commercial navigation systems business.

W. H. Arata, jr. of Nortronics said that representatives from Norair, Ventura, Hallicrafters, other aerospace firms, an airline company and the FAA participated.

Northrop personnel who participated in the seminar were: Dr. H. W. E. Schlitt, Nortronics; N. E. Garlock, Norair; C. M. McConkey, Hallicrafters; and J. C. Dean, Ventura.

Mr. Arata said that seminars and other similar activities will be held by Nortronics in the future to increase the division's knowledge of the commercial business.

The purpose of inviting other firms and organizations to participate is to keep Northrop abreast of thinking in the industry by those who will buy, use and certify commercial navigation systems.



*STRAIGHT FROM STORES—Jack Kelders (right) of Nortronics Anaheim is small in size but big in service as he serves a Materiel Stores "customer." Mr. Kelders is top-notch stock clerk with a rather remarkable background of work as longshoreman, butler, chauffeur and ditch digger.*



## LORNA, SHARYL AND TAMMY

## Movies, Stage, TV—A Family Tradition

Out at the Earl Locke home in Torrance the critiques are always interesting.

Everybody takes part.

Earl and his wife, Lola, express their opinions. Thirteen-year-old Lorna and Sharyl, 11, add their bit. Tammy, 7, sometimes stands silent, but often comes on loud and clear.

The critiques are a family tradition. They always follow a dramatic performance by one of the girls. There is no feeling of being "picked on" involved. Just a genuine interest in seeing the individual improve.

Many of the current sessions follow weekly airings of the television series "The Monroes." Which explains Tammy's position.

Tammy Locke is one of the stars of that series. She plays "Amy."

And the other Locke girls are seasoned performers, each with her own list of credits.

All of which would indicate family critiques have their place.

Lorna Locke prefers stage performances to other outlets. She has appeared in school and little theatre productions. She is also "big sister," a confident and steadying influence on the younger girls.

Sharyl Locke started it all when she won honors in a baby contest when she was just four.



**THREE FOR THE SHOW**—Sharyl, Tammy and Lorna Locke, daughters of Norair's Earl Locke, are veteran show business personalities. Younger girls have appeared in television commercials and programs, plus full-length motion pictures. Lorna is a stage performer. Tammy, 7, is one of the stars of "The Monroes" television series.

This led to a series of television commercials and full-length motion pictures. Noteworthy was her appearance with Cary Grant and Leslie Caron in "Father Goose" and her work with Joan Crawford and John Ireland in "I Saw What You Did."

She has also worked on "Bonanza" and "Burke's Law" television segments, among others. Tammy auditioned for her first

work at the age of two and won the part hands down. She made a series of television commercials, then moved on into motion pictures. She worked with Van Heflin and Ann-Margret in "To Catch a Thief." And she was in the cast of the television production "The Voice of Charlie Pont" which won second place in the Emmy nominations.

Earl Locke is a leadman in Electrical Maintenance at Northrop Norair; a 17-year Northrop veteran.

Lola Locke worked for several years in Norair's Template Control. Neither Earl nor Lola are performers.

One generation back, however, Earl's father was a regular Orpheum circuit vaudeville star and other family members have been performers.

Mrs. Locke doubles as the girls' dialogue and drama coach. Dr. Howard Banks, head of the El Camino College Drama Department, has helped each girl in her dramatic work.

But for the most part, experience and exposure have been their greatest teachers.

Mr. and Mrs. Locke are careful to see the girls take on only as much work as they can handle and still live normal lives.

Has all the attention and publicity affected the girls?

"Not really," Earl says, "they are not overly impressed with themselves or, for that matter, with the stars with whom they work. But they do enjoy the work."

(See **TRADITION**, page 3)

Northrop Tour  
On Program for  
WESTEC Men

More than 100 participants in the 1967 Western Metal and Tool Exposition and Conference (WESTEC) visited Northrop Norair this month as part of the agenda of the five-day program.

The "Techtour," as it was called, included stops in Plant Three, the Boeing 747 manufacturing area; the F-5/T-38 assembly area; the manufacturing research and development area; the tape control machine tool group; and the titanium metal forming shop.

"Metalworking Fluids" was the title of the March 15 tour. Papers presented as part of the program were "Bench Testing Metalworking Fluids," "Apathy, Ignorance and Indifference of Metalworking Fluids" and "Cutting Oils and Coolants—Survey and Evaluation." Author of the latter paper is Robert H. Pugh, a senior research engineer in Norair Manufacturing Research and Development.



**A NORAIR 'TECHTOUR'**—Participants in the 1967 WESTEC conference tour Northrop's Boeing 747 manufacturing operations, viewing a model of the new Plant Three. More than 100 delegates to WESTEC visited Norair this month as part of the five-day program.

## 'BACK TO SCHOOL'

## Recruiter Workshop Held

Interviewers from major Northrop Corporation Personnel offices in California "went back to school" recently.

They attended a "Recruiter Workshop," voluntarily and on their own time.

Held one afternoon-evening a week over a four-week period, the program took 33 participants to four different locations — Northrop Norair, Northrop Ventura, Northrop Nortronics (Anaheim and Nortronics Hawthorne-Palos Verdes).

At each point they met with key members of management for briefings on programs, products and personnel. Facility tours followed.

In addition, each session was devoted to discussions of topics of general interest to the interviewers.

Paul Faranda, chief of Person-

nel Administration at Nortronics, was one of the principal architects of the program working in conjunction with other members of the Northrop Interdivisional Industrial Relations Coordinating Committee's Employment Subcommittee.

"In addition to their day-to-day contacts with potential employees, these men travel as recruiters," Mr. Faranda said. "Training of this type better equips them for discussing all of Northrop, not just the division they serve."

Mr. Faranda used Northrop's continuing effort to recruit outstanding college graduates as an illustration of how the workshop aids interviewers. He pointed out competition for graduates has never been more intense and that each firm is being limited in interview time on each campus.

Eight Norair  
Men Join  
Youth Force

A pilot program for a new high school Youth Motivation Task Force is ready to begin with eight Northrop Norair volunteers set to take part.

They are Edward Aguilar, David Saldana, Victor Garcia, Frank Macias, Floyd Boggus, Major Thomas, Mayo Loving and Bennie Thomas.

Last month this group took part in briefings related to the program.

During March they will visit two selected Los Angeles area high schools. At each school they will talk with students, explain their work, its rewards, its requirements and what education is needed to perform it. They will urge the student to continue his or her studies as long as possible.

This unique face-to-face program is being coordinated by the Los Angeles Merit Employment Committee. It is a follow-on to a nationwide program conducted at the college level following an introduction by Vice President H. H. Humphrey.

Northrop is one of 20 business and industry firms in the area taking part in the high school effort.

Northrop, like the other participating firms, is helping locate volunteers and make it possible for them to visit the schools to assist students by acquainting them with the many opportunities open to those who prepare themselves for it.

A majority of students slated to take part in initial pilot program efforts are from minority groups.



**'STAY IN SCHOOL'**—Northrop Norair's David Saldana addresses students at Garfield High School in Los Angeles as part of a program designed to make teenagers aware of the importance of continuing their education. Also on the program at Garfield was Edward Aguilar (left), also of Norair.

McNamara  
Recognizes  
Cost Efforts

In a memorandum to President Johnson, Defense Secretary Robert S. McNamara has commended Northrop Corporation for successful cost-reduction efforts.

Other contractors also were mentioned, but Mr. McNamara singled out Northrop "for reducing costs \$350,468 by applying electronic data processing techniques to its purchase order, procurement management information, and materiel industrial and standard systems."

"These savings benefit the Department of Defense," Mr. McNamara said, "by reducing payments to contractors under cost-reimbursement contracts, and by enabling Defense to share in savings under contracts with incentive-type arrangements."

Reviews Praise  
John Chapman's  
'Incredible L.A.'

Only a transplanted Southern Californian—one who has moved here—can look at the area and assess it objectively. Those who are born here are too close, so to speak, to have this objectivity.

Perhaps this is why John L. Chapman of Northrop Public Relations has been able to do such an excellent job in writing "Incredible Los Angeles," published this year by Harper & Row. Mr. Chapman is from Minneapolis, Minnesota, via San Diego.



Mr. Chapman

Mr. Chapman, who is editor of the Northrop Technical Digest, joined Northrop in 1961.

An excerpt from his new book appeared recently in a feature-length article in "West Magazine," a Sunday publication of the Los Angeles Times. Other reviews have appeared in local and national publications.

Mr. Chapman holds a degree in journalism from the University of Minnesota. In 1960, he published his first book, "ATLAS: The Story of a Missile." In 1962, he was the winner of an award from the American Association for the Advancement of Science, and Westinghouse Corporation.



# Classified

Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private business are not accepted. The Northrop News reserves the right to edit or omit ads. Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 64. Ads are limited to one item and one ad per person each issue. Deadline is noon Wednesday, one week before publication.

**For Sale**  
Tuner, Dyna FM, model FM-1, \$25. P.V., 377-4623. A  
Washer-Dryer Combination, Bendix elec., \$15. Gardena, 324-4817. A  
Figure Ice Skates, ladies' Nestor Johnson, size 9, white, \$15. Anaheim, 714-774-2779. A  
Runabout, 16', 75 h.p., Scott outboard & trailer, \$1,000. Hawthorne, 677-6498. A  
Dining Set, blonde, table & 6 uphol. chairs, china closet, buffet, 3 extra leaves, \$185. Lennox, OR 7-6604. A  
Pup, German shepherd, 10 wks. old, male, has shots, papers, \$70. Lawndale, 675-9446, before 3 p.m. A  
Ford, 1966 Country sed. sta. wagon, 390 eng., p/b, p/s, r/h, full fact. warranty, \$2,450. Inglewood, 677-3089. A  
Tropical Fish, kissing guarami, full grown, \$3.50. Inglewood, 675-0788, 10 a.m.-3 p.m. A  
Surfboard, Dewey Weber, 9' 10", med. sized, surf jacket, car rack, \$100. Inglewood, PL 5-6830. A  
Amplifier, Heathkit AA-22 66 watts, solid state, 2 mos. old, \$100. L.A., 732-4986. A  
Steptables, maple, w/shutter doors, matching coffee table, pr. milk glass lamps, \$85 or sell sep. Harbor City, 326-1856. A  
Record Changer, Garrard, walnut base, extra tone arm head, mod. RC-98L, \$30. P.V. Pen., 377-3806. A  
Motorcycle, Suzuki, 150 S32-2, 1966, \$350. P.V., FR 8-1561. A  
Refrigerator, Gen. Elec., \$30. Hawthorne, 676-8676. A  
Home, 3-bdrm., 1 1/4 bath, family rm., 3 1/2 yrs. old, landscaped, fenced, w/w used brick fireplace, patio, cpts., dps., bltins, 2 1/2-car gar., 1 1/2 mile to Ventura Div., 10% dn., \$22,000. Newbury Pk., 805-498-3043. A  
Boat, 14', fiberglass, 30 h.p., o/board motor, Evinrude, lge. trailer, ski equip., \$475. Torrance, 327-3947. A  
Trailer, fold-down type, \$50. Downey, TO 2-3310. A  
Malibu, 1966 2-dr. h/top, 327 cu. in., auto. trans., p/s, b/seats, console, many extras, \$2,175. Manhattan Bch., FR 4-7546. A  
Movie Camera, 8mm Brownie, carrying case, \$15. Manhattan Bch., FR 4-8036. A  
House, near Northrop, 3-bdrm., 1 1/4 bath, cpts., dps., newly decorated inside & out, heated pool, dble. gar., \$29,950. Inglewood, PL 4-0351. A  
Whirlpool Bath Unit, Jacuzzi, cost \$285; \$160. L.A., WE 5-0493. A  
Hi-Fi Radio-phon., 3 spd., table model, \$3. So. Pasadena, 799-9476. A  
Chevrolet, 1956 Bel-Air, V-8, h/top, auto., 2-dr., r/h, \$250. Box 601. A  
Camper, Globe, 8', 1967, \$1,100. Inglewood, 634-7092. A  
Chevrolet, 1959, \$225. Lomita, 325-1383. A  
House, 3-bdrm., 2-bath, 3 yrs. old, cpts., dps., near freeways, \$26,750. Garden Grove, 714-892-3546. A  
Dodge, 1959 Van, 16' body, mounted on 3/4-ton chassis, auto. trans., p/b, \$425. Gardena, 324-7304. A  
Sports Car Body, fiberglass, \$25. Torrance, DA 6-8273. A  
Desk, 24 x 48, steel, single pedestal w/3 box drws., modern, incl. matching swivel chair, cost over \$300; \$140. Los Alamitos, 596-0521. A  
Mattress, & spring set, twin bed size, \$10. Hawthorne, OS 5-6203. A  
Stove, Magic-Chef, approx. 36" wide, extra lge. oven, \$50. Inglewood, FR 1-5082. A  
Honda, 1966, 160 c.c. Scrambler, motor o/hailed, new paint, \$425. Gardena, 323-6759. A  
Lot, 75x150, level, fully improved, \$17,900. P.V. Pen., FR 7-4943. A  
Home, 4-bdrm. & fam. rm., 2-bath, bltins, \$33,000. Inglewood, 676-4981. A  
Chevrolet, 1961 station wagon, Parkwood, V-8, 6-passenger, p/s, r/h, \$695. Manhattan Bch., 374-6003. A  
Volkswagen, 1966, Blaupunkt FM/AM/SW radio, sunroof, wooden wheel, adj. rear windows, \$1,550. L.A. 628-3416. A  
Camera, Yashica C, twin lens reflex for 120 film, sep. meter, flash & tripod, \$35. El Segundo, 322-3119. A  
Pup, poodle, black, female, miniature AKC, 6 wks. old, \$115. L.A., WE 3-3051. A  
Jeep, Willys, 1957, 1-wheel trailer & power attachments, new top & curtains, \$1,400. L.A., 293-3316. A  
Washer-Dryer comb., Whirlpool, 1-unit, yellow, auto. \$50. Torrance, 328-6863. A  
Coins, Lincoln penny collections, 1909 to date, \$125. Box 602. A  
Ford, 1966 pickup, F-100, w/cab-high shell, V-8 eng., auto. trans., custom cab, r/h, more extras, 5,000 miles, warranty, \$2,100. Garden Grove, 714-638-5401. A

**For Sale**  
Accordion, white, 120 bass, Sonola, w/case, \$200. Inglewood, 674-0755. A  
Home, 3-bdrm., 2-bath, 2 yrs. old, fireplace, cpts., insulated, G.E. bltins, dishwasher, trees, sprinklers, low dn., \$25,900. Compton, 635-0862. A  
Corvette, 1965, Americans, 8 1/2" Goodyears, Hurst, 4.56, headers, AM-FM, \$3,200. Hawthorne, OS 5-1365. A  
Volkswagen, 1963, new clutch, brakes & recent tune up, \$900. Inglewood, OS 9-7058. A  
Clarinet, B-flat, Pierre Maure, \$85. Chatsworth, 882-0761. A  
Tape Recorder, stereo, Pentron, 4-track, plus microphones & assorted tapes, \$74.99. Hermosa Bch., 374-2135. A  
Car Radio, Voxson, 12v, \$25. Glendale, 244-9787. A  
Ford, 1963, Galaxie 500 XL, new trans. & guarantee, \$1,100. Hawthorne, OS 6-0361. A  
Ski Boots, men's Koflach, tie-ups, 9 1/2, used 2 seasons, \$22.50. L.A., 754-9070. A  
Stove, O'Keefe & Merritt, 4-burners, griddle, clock & timer, broiler, \$50. Lakewood, HA 1-5128. A  
Guitar, Fender precision bass, custom white, h/shell case, \$185. P.V. Pen., 375-5761. A  
Acreage, 10 acres in Antelope Valley, level, very accessible, between fwy. & Hwy. 14, in 2 1/2-acre parcels, or \$13,300. Torrance, FR 8-1026. A  
Drums, \$145. Torrance, 324-9193. A  
Chevrolet, 1959 Nomad station wagon, all extras, \$495. Malibu, 456-8559. A  
Lamp, infra, heat, or sun, cost \$70; \$35. L.A., 936-5903. A  
Ford, 1957 1/2-ton pickup, r/h, new brakes, 8,000 miles on rebtl. eng., \$500. Redondo Bch., 376-8285. A  
Youth Bed, natural finish, \$10. Redondo Bch., 375-5838. A  
Mobile Home, 1963, Sahara, 12x60, 2-bdrm., front kitchen w/bltins, 42' awning, 32' porch, \$4,750. Redondo Bch., 372-7860. A  
Oldsmobile, 1961, 4-dr., air-cond., r/h, p/s, p/b, 50,000 miles, \$875. P.V. Ests., FR 5-5097. A  
Refrigerator, Admiral, 9 cu. ft., \$50. Redondo Bch., 370-7130. A  
Camera, Mamiya, 16mm, bltin light meter, \$30. Box 603. A  
Corvette, 1964 fastback, 300 h.p., 4-spd., AM-FM, recently painted, good tires, \$2,800. Reseda, 343-9463. A  
Freezer, Westinghouse upright, self-defrosting, 65" tall, 30" wide, 3 yrs. old, \$150. Box 604. A  
Cessna 170B, 1955, 1152 t.t., 172 s.m.o.h.e. completely equipped, many extras, \$4,750. P.V., 377-2002. A  
Volkswagen, 1965, 20,000 miles, \$1,300. Redondo Bch., 370-0342. A  
Marine Engine, 4-cyl., overhead cam, 50 h.p., \$25. Hawthorne, 676-7109. A  
Ford, 1959 Galaxie, 2-dr. h/top, r/h, auto. trans., T-Bird eng., \$395. Van Nuys, ST 1-3854. A  
Trail Bike, Honda, spark arrester, helmet, carrier, \$200. Hawthorne, OS 6-3886. A  
Engine, 1955 Ford V-8, complete, \$25. Hawthorne, OS 9-6219. A  
Broiler, Char-Glo, counter type kitchen model, ceramic coals controlled heat, \$125. Compton, NE 2-7635. A  
Rink Roller Skates, ladies', white, size 6-6 1/2, \$7.50. Inglewood, 673-1133. A  
Horse, 8 yrs. old, 1/2 Arabian gelding, registered, \$400. Rolling Hills, FR 7-3487. A  
Range, O'Keefe & Merritt, center griddle, \$30. Hawthorne, 672-0749. A  
Freezer, Amana upright, approx. 13 cu. ft., \$50. Buena Pk., 827-6159. A  
MG Midget, 1964, wire wheels, \$800. Anaheim, 774-2439. A  
Boat, 12' Burchcraft, 7 1/2 h.p. motor, trailer, hitch, oars, \$225. La Mirada, WH 1-1865. A  
Hospital Bed, new mattress, \$60. Hawthorne, FR 0-1741. A  
Cabin Cruiser, Glasspar club mariner, 19', Volvo I/o & trailer, \$2,395. Hermosa Bch., 374-3164. A  
TR-4, convt. w/tonneau, 1963, \$1,250. Redondo Bch., 378-3201. A  
Crib, mattress, 3 yrs. old, \$30. Gardena, DA 9-6916. A  
Chrysler, 1954 New Yorker Deluxe, p/s, r/h, \$200. Wilmington, TE 5-9238. A  
Plymouth, 1958, sta. wag., V-8, auto. trans., \$45. Inglewood, 671-3854. A  
Hard top, 1965 Corvette, Nassau blue, fits 1963-65, \$200. Playa del Rey, 823-4167. A  
Surfboard, South Bay, 8'6", 3 redwood stringers, \$60. Redondo, 374-9944. A  
Guitar, 12-string, hard shell case, \$55. Baldwin Hills, 295-7972. A  
Ford, 1959 station wagon, r/h, auto., 2 new tires, battery, radiator, 65,000 act. miles, \$350. Anaheim, 714-637-6634. A  
Fuel Injection for Corvette, 283 cu. in., \$75. La Habra, 697-4927. A  
Lot, Desert Hot Springs, 60'x130', near downtown, \$2,500. Long Bch., 370-1902, DA 4-2055. A  
Boat, 12', fiberglass, trailer, 5 1/2 h.p. Elgin eng., \$250. Torrance, DA 4-7423. A  
Cabin Cruiser, 16', Mark 75A Mercury, elec. start, many extras, lge. wheel trailer, \$895. Cypress, 714-527-7450. A  
Refrigerator, 9 cu. ft., w/beer tapper unit & keg, \$150. Rolling Hills, FR 7-3487. A  
Pickup, 1960 Chevrolet, 1 1/2-ton, 6-cyl., stick, \$600. Hawthorne, 676-5186. A

**For Sale**  
House, 2-story, 2,150 sq. ft., ocean view, 5-bdrm. or 4 & den, 3 baths, family rm., extra lge. gar., landscaping, cpts., dps., fenced yd., 1 1/2 miles from Nortronics P.V., \$47,000. P.V. Pen., 377-6265. A  
Engine Short Block Assembly, Sunbeam Alpine, Series I, needs rings, \$50. Santa Ana, 714-543-0435. A  
Home, 4-bdrm., 2 baths, family rm., \$186 pymnts. cover principal & interest, \$54 covers taxes & insurance, 1st trust deed \$28,000. Hollypark, 675-8070. A  
Trumpet, Olds, \$250. San Pedro, TE 3-3826. A  
Formal, waltz length, red satin w/net stole, size 11-12, \$5. Hawthorne, 675-3517. A  
Cemetery Lot, in Eventide section of Green Hills Memorial Park, perpetual endowment care, \$400. Manhattan Bch., FR 6-4677. A  
Ski Pants, women's White Stag, extra stretch, black, size 12 reg., \$25. Fullerton, 714-879-1447. A  
Airplane, Cessna 150, 1966 full gyro panel, 360 c.h., radio, t.t. 450 hrs., Torrance based, \$6,600. Hawthorne, FR 8-6951, OS 6-6138. A  
End Tables, Duncan Phyfe, \$10 pr. Inglewood, 757-2555. A  
Lot, unobstructed ocean view, underground utilities, in P.V., \$1,000 dn. or more at option of buyer, owner carry bal. at 6%, \$22,000. Rolling Hills Ests., 377-0146. A  
Chair, set, antique white cane, gold & olive upholstery, \$75 ea. Torrance, 326-0124. A  
Aquarium, 15 gals., light, piston air pump, carbon filters, access., \$25. L.A., 837-4036. A  
Propeller, for boat, bronze, \$15. Long Bch., NE 2-3489. A  
Hand-Mower, Craftsman, hvy. duty, steel frame, 5 blades, adj. cut height, \$20. Lawndale, OS 6-6726. A  
Motor, 3 h.p. Evinrude, long shaft, \$125. Garden Grove, 714-892-7440. A  
Speakers, stereo, James B. Lansing L44, walnut enclosures, paid \$100 ea.; \$50 ea. L.A., 474-0814. A  
House, near Nortronics P.V., tri-level, 4-bdrm., 3 baths, rumpus rm. w/wet bar, air cond., 4 yrs. old, \$45,000. San Pedro, 831-0480. A  
Corvair Monza, 1963, 2-dr., 4-spd., r/h, \$600. Inglewood, 673-3503. A  
Dining Room Set, solid mahogany, table w/6 chairs & buffet, \$125. Inglewood, 677-6907. A  
House, 4-bdrm., family rm., 2 1/2 baths, 1 acre, horses O.K., near Northrop Ventura, \$35,000. Somis, 805-482-1186. A  
Rambler American, 1960, 4-dr. sed., o/drive, \$199.95. L.A., 664-6564. A  
House, 3-bdrm., 1 1/2 bath, bltins, cpts., dps., fireplace, remodeled, 10% down, \$32,500. Inglewood, DA 9-2174. A  
Ford, 1964 2-dr., V-8, r/h, \$1,150. Redondo Bch., 372-0452. A  
DeSoto, 1959 Firedome, 4-dr., new tires, shocks, \$500. Garden Grove, 539-3325. A  
Typewriter, Remington, 14" carriage, recently o/hailed, \$75. Redondo Bch., 370-7092. A  
Volkswagen, 1961 Kombi bus, tape deck, eng. rebtl., set up for sleeping or w/seats, new brakes, battery, \$700. Pac. Pal., 454-5985. A  
Freezer, chest-type, holds 575 lbs., \$75. Torrance, DA 9-3721. A  
Camera, Yashica, 35mm single lens reflex, bltin light meter, f1.8 lens, 1/1000 sec. spd., cost \$205; \$115. Marina del Rey, 823-2655. A  
Chevrolet, 1959 Impala 2-dr. h/top, 348 eng., full power, \$500. Canoga Pk., 882-2429. A  
Oldsmobile, 1959 Dynamic 88, r/h, w/w, new paint, \$375. Inglewood, 679-9891. A  
Bowling Ball, ladies' 12-lb. Columbia, metallic blue, \$15. Torrance, 371-1198. A  
Truck, 1960 1/2-ton Ford, lge. bed, w/8 1/2 non-cabover Lovebird camper, bltins & intercom, \$1,000 or camper only \$400. Torrance, 320-3440. A  
Guitar, Airline, \$25. Inglewood, 758-9182. A  
Vacuum Cleaner, Hoover, \$10. Hawthorne, 675-6963. A  
Piano, spinet w/bench, \$200. L.A., 757-3595. A  
Shopsmith Mark V, plus access., jointer, drum sander, disc sander, couplers, lathe chisels, extra blade & others, \$200. L.A., 645-1274. A  
Yamaha, 1964, 80 cc, 3,000 miles, \$225. Hawthorne, 679-4237. A  
Boat, 26', unfinished, \$600. Lynwood, NE 1-0858. A  
Cadillac, 1955 convt., complete o/haul, new tires, \$350. L.A., 474-8526. A  
Radio & Record Player Amplifier Comb., Scott stereo master 344B FM, transistorized, 100 watt, cost \$335; \$275. Camarillo, 805-482-3515. A  
MGA, 1961 roadster, wire wheels, \$875. Van Nuys, 784-9807. A  
Mower, 2-cyl. Craftsman, roto, \$10. Torrance, 371-5916. A  
**Wanted to Buy**  
Motorcycle, 1948-1957 B.M.W. or Vincent, incomplete or complete. Hawthorne, 672-1576. B  
Chrome Wheels, Ford, 15" x 5 1/2", 2 regular, 2 reversed. Gardena, DA 9-1705. B  
Movie Film Viewer & splicer, 16mm. P.V. Pen., 377-7670. B  
Trumpet, should be in good condition. Lakewood, 630-4368. B  
Chevrolet, 1959 to 1963 Impala 2-dr. h/top or Chevelle, 2-dr. Inglewood, 755-1071. B

**Rides and Riders**  
**Rides Wanted**  
7:30 a.m. — 4:12 p.m.  
Manchester & Prairie, Inglewood. Girtha Hestilow, Norair, ext. 1611, 672-9306.  
8 a.m. — 4:42 p.m.  
Rosecrans & Western, Gardena. Jodee Parker, NSL, ext. 4720, 323-8165.  
**Rentals Offered**  
Duplex, 2-bdrm., den, fenced yard, in Westchester, \$170 mo. Playa del Rey, 391-8072. E  
Apt., 2-bdrm., unfurn., cpts., dps., bltins, closed gar., hobby shop, \$125 mo. Torrance, FA 0-5443. E  
Cabin, Green Valley Lake, \$30 w/end; \$55 wk. Torrance, 320-2002. E  
Apt., deluxe, 1-bdrm., pool, \$95 mo. Redondo Bch., 376-2117. E  
Apt., 1-bdrm., furn. & unfurn., fireplace, 1/2 block to ocean, closed gar., \$140. Redondo Bch., 378-7905. E  
Apt., 1-bdrm., unfurn., couple only, cpts., dps., bltin oven, gar. laundry rm., \$105. Hawthorne, OS 5-5898. E  
Vacation Cottages, Idyllwild, 1 & 2 bdrms., fireplace, stream, patios, \$15-\$35 w/ends; \$45-\$75 wk. L.A., PL 4-5288. E  
Cabin, Big Bear Lake, sleeps 7 to 9, \$21 w/end; \$58 wk. Bellflower, 10 7-0662. E  
Apt., 2-bdrm., furn., new cpts., dps., bltins, walk to Nortronics Anaheim, \$140 mo. Anaheim, 714-526-3053. E  
Home, newly painted inside & out, \$250 mo. lease. P.V. Pen., 377-5439. E  
Exec. Apt., 2-bdrm., 2-bath, 1,400 sq. ft., lux. features, \$175 mo. Inglewood, 670-6084. E  
Vacation Cabins, Lake Gregory & Crestline, \$25 w/ends; \$60 wk. Venice, EX 1-2040. E  
House, 3-bdrm., 1 1/4 bath, mod. kitchen, family, laundry & hobby rm., patio, dble. gar., \$275. Hermosa Bch., FR 2-1632. E  
**Rentals Wanted**  
Garage, within 10-min. walking distance to Engineering & Science bldg. which may be locked from approx. 7:30 a.m. to 5:15 p.m. on w.days. Lakewood, 634-8632. F  
Private Room, w/bath, use during workweek only, close to Nortronics P.V. facility, man, best references. Box 605. F  
**Personals**  
I would like to extend my appreciation to NRC, Northrop Retirement Club, & many friends at Northrop for their thoughtfulness on the recent loss of my husband, Glenn A. Rhoads, known to his friends & fellow employees as "Dusty Rhoads." MRS. BETH RHODS. L  
Ride wanted to & from Medical Center, hours to suit driver, vicinity of Imperial & Hawthorne. Hawthorne, 675-1471. L  
**For Sale or Trade**  
Condominium, 3-bdrm., 2 1/2 bath, tri-level, 2 yrs. old, pool, \$33,500, or trade \$10,000 equity as down payment to existing loan on small, older home in Rolling Hills or San Pedro area. Rolling Hills, 547-2716. M  
Outboard Motor, Johnson, 35 h.p., \$200, or trade for pickup or guns of equal value. Gardena, 324-9853. M  
Drafting Machine, 16" arms w/wood case, \$25 or trade for pistol, Luger preferred, .22 auto. rifle or English bicycle. Manhattan Bch., 379-3487. M  
Coins, 1941 to date, circulated to B.U. Lincoln or Jefferson rolls, \$80 roll & up or trade for Indian head pennies. Torrance, DA 6-5558. M  
Camper-Cabover, 1954 Callen, 8' w/cargo door & 1962 Chev. truck, 1 1/2-ton, \$1,545 or trade on 3/4-ton Chev. truck. La Mirada, 944-3794. M

## Meeting Date Set By Sailing Club

The newly organized Northrop Sailing Club will hold its third meeting next week, following two successful meetings and a Sunday sail in March.

The group will meet at 5 p.m. April 6 in the NRC Clubhouse in Hawthorne.

The first meeting, held March 1, was followed by a sail at Marina del Rey on March 19. The activity attracted 22 persons.

Interested Northrop employees—boat owners or not—are eligible to participate in club activities. Further information may be obtained by contacting Jim Reeder at Nortronics Hawthorne ext. 573.

## Secretaries Invited To Spring Seminar

Northrop secretaries have been extended an invitation to take part in an all-day Spring Seminar April 8 under sponsorship of the Stellar Chapter, National Secretaries Association.

It will be held at the Tudor Inn, Norwalk.

Andy Park of radio station KMPC will be featured in a discussion of "M'Lady In World Affairs." Other subjects include "M'Lady in Education" and "M'Lady After Five."

Doris Robinson, ext. 1067 at Norair, will accept reservations and provide additional information.

## TRADITION

(Continued from page 2)

Because the Locke family is close knit and likes to ride horseback, fish, swim, water ski, ice skate and camp together, the travel involved does make a difference.

For example, Mrs. Locke and Tammy spent from May to October in Wyoming filming "The Monroes" segments. Earl and the other girls drove up, spent his vacation there, and came home. Each of the other girls went back for longer stays later.

"We all like it best when we can be home together at the end of the day," Earl says. "That's why we put such great store in the critiques—they are family fun."



AN INSCRIBED PAPERWEIGHT—William Larrabee (right), Corporate vice president of Industrial Relations, receives a paperweight from Bernie Schier of Norair Management Systems as appreciation for addressing the Southwest Los Angeles Chapter of the National Association of Accountants. Mr. Larrabee's topic was "The Impact of Fringe Benefits on Profits."



## Zoom Lens Utilized in Film Viewer

A film viewer which magnifies images up to 70 times has been developed by Northrop's Nortronics Division for precision interpretation and evaluation of film.

The Model 100 uses the Nortronics zoom lens for continuous variable magnification between the 3 to 70 times ranges, and provides close-up study of any part of any frame.

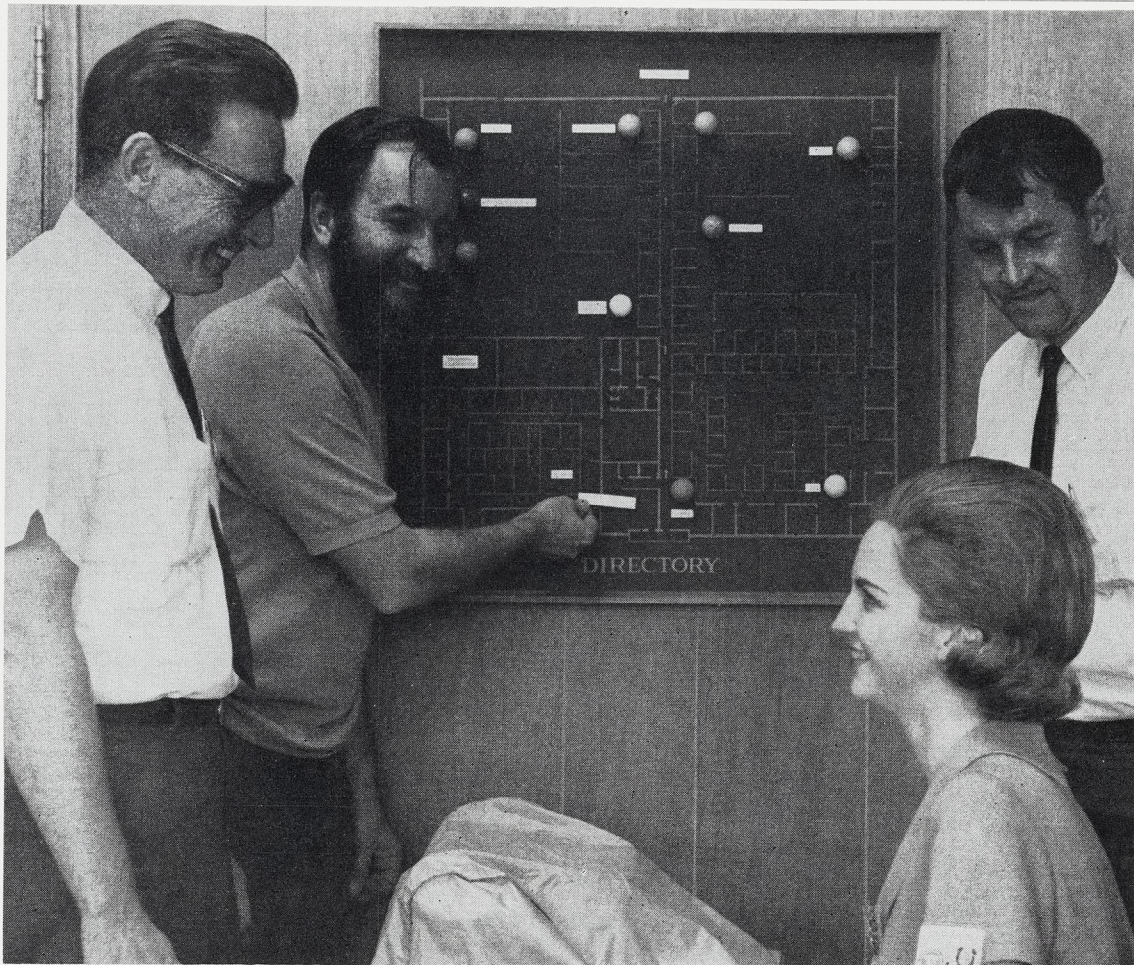
Suggested applications for the Model 100 include: reconnaissance imagery analysis; field map evaluation and preparation; meteorological satellite photo evaluation; geophysical surveys and studies; oceanographic serial data evaluations; and photointerpretation training.

The viewer operator controls the evaluation and interpretation of film by using a control stick to: (1) select the film speed; (2) move the film either horizontally or vertically for better views of images; and (3) rotate the film plus or minus 180 degrees to eliminate problems which might arise due to aircraft movement during photography missions. The operator also can control the magnification, focus and illumination mechanisms.

Data on film rolls up to 1,000 feet long, between 70-mm and 9½ inches wide can be accepted by the Model 100, and all types of film can be handled, such as: color, infrared, thin or standard base; or radar sensor film.

During the scanning (viewing) mode, film speeds can be controlled to less than one-tenth inch per second movement. For rewinding, speeds of up to 480 inches per second are possible.

A 2,000 watt tungsten filament lamp source and zoom condenser lenses are used to keep the lens pupil completely filled throughout the magnification range. The light source can illuminate a 9½ by 9½ inch area of film. Heat transmitting mirrors, absorbing filters and air-cooled radiators are used to dissipate the heat. This prevents the film gate temperature from exceeding 100 degrees during viewing operations.



**YOU ARE HERE**—Barbara Yelland, receptionist in Building Y-12 at Anaheim, gets a briefing on a color-coded locating system devel-

oped by (left to right) Chuck Felder, Bob Peck and Ted Wiisil.

## Toastmasters' Greenberger Reaches Finals

Hank Greenberger, a senior engineer at Nortronics Palos Verdes, will represent the Northrop Toastmasters Club in May in district-wide speaking competition.

Mr. Greenberger was named winner of the Area 4 speaking contest on March 18, at the Cockatoo Inn in Hawthorne.

He defeated five other contestants from the area.

Earlier, on March 9, he won the club's serious speaking contest.

The district finals will be held on May 20 at the Hacienda Hotel in El Segundo.

In other Toastmasters activity, officers for the next term will be installed on April 6 at the Inglewood Country Club. George Milne, area governor of Toastmasters Area 4, will be in charge of the installation.

## A COLORFUL IDEA

### 'Turn Right at the Pink Ball'

"Just take the first right after the pink ball," explains the pretty receptionist in Anaheim's Y-12 building.

She may smile when giving visitors instructions like that, but she isn't joking. The instructions are both serious and effective.

Colored styrofoam balls are suspended by wires over key locations throughout the building. Visible above the tops of office partitions, these unusual navigation aids help visitors find their way through the maze of offices.

In the lobby, a display of the

building floor plan shows the color and location of the suspended balls. Instead of having to remember complicated instructions, a visitor can see where he has to go and then just look for the right colored sphere.

This refreshing solution to a rather mundane problem was developed by Nortronics' Graphic Arts section at Anaheim.

## Junior Achievement Firms Plan 'Push'

The big push—the sales push—is now on among three Junior Achievement firms counseled by Northrop Nortronics men.

This is the big effort when the youngsters point toward the end of the annual venture into business by marketing an accumulation of products.

Styro-Lite and NAJAC, firms counseled by Nortronics personnel at Anaheim, are selling tack boards and candle holders respectively.

HESKO, the firm counseled by Hawthorne and Palos Verdes Nortronics men, is selling highway emergency safety kits.

## Boy Scouts Benefit By Unique 'Merger'

Out in the San Gabriel Valley (Monterey Park) a "merger" of Northrop Norair, Northrop Nortronics and Lockheed Aircraft men is providing leadership for an outstanding Boy Scout effort.

The scoutmaster is Ray Gutierrez, a Lockheed Customer Service representative. The first assistant scoutmaster is Jim Adams, Nortronics Facilities administrator at Hawthorne. Norair's Mac Roth is committee chairman for the troop.

## 'Seven Seas' Program to Include DSSP

Oceanography and the Navy's Deep Submergence Systems Project (DSSP) are subjects that would interest most college students.

However, for 500 students, 50 instructors, and 150 officers and crew about to embark on a semester afloat, these subjects take on additional significance.

The students in this case are part of Chapman College's "Seven Seas" program of International Education.

Chapman College, in Orange, undertook this unique method of education in the fall of 1965. The 15,000 ton Holland-American liner, S.S. Ryndam, represents a true floating campus complete with classrooms, laboratories, and a 280-seat auditorium. During the three and a half month semester, the students, from freshmen to seniors, take 13 units of accredited college courses, sail around the world, and stop at many ports of interest, participating in extensive "in-port" programs designed to fully acquaint the student with the many things observed during the course of tours.

Although only two years old, a measure of recognition that the program has already received is indicated by the more than 200 different colleges and universities that were represented by the students who sailed from Los Angeles on the S.S. Ryndam last month.

Presenting the pre-departure picture of man's efforts under the sea was Thomas S. Cooke, senior engineer at Nortronics Anaheim. As a member of the Test and Evaluation section of DSSP, Mr. Cooke is keenly aware of the Navy's activity in the exploration of the ocean. As an expert SCUBA diver, he has first-hand knowledge of the world beneath the ocean. Finally, as an alumnus of Chapman College, he knows the faculty and their hopes for the "Seven Seas" program.

"Because these students are going to be on the ocean for the next three and a half months, their interest in oceanography can easily be understood," said Mr. Cooke. "The work we're doing for the Navy as systems engineers for DSSP should help them get a greater appreciation for the potential of the sea."

Mr. Cooke graduated from Chapman with a degree in physical science.



**HOW NOW, 'MR. CLEAN'**—Douglas Leavenworth, chief of Product Support at Nortronics, plays the role of the immaculate "Mr. Clean" as Fran Brown (right) and Judy Weible add their bit to a drive to clean out obsolete and unnecessary files. Month-long drive is nearing an end and Product Support reports remarkable results in the reduction of data, files and other materials.



**TWENTY YEARS FOR FOUR** — Frank Lynch, Nortronics vice president and manager of Operations (center), recently presented Nor-

throp 20-year service pins to this quartet. They are, from left, Bill Van Ordstrand, Gran Wilson, Charles Hanlon and Glen Dory.



# NORTHROP NEWS

NORTHROP NORTRONICS

Published biweekly by Northrop Corporation, Beverly Hills, California

Vol. 25, No. 7

April 12, 1967



**FLYING SAUCER ENTHUSIAST** Rod Van Orden, 16, son of a Nortronics senior engineer, shows off model of passenger-carrying flying saucer he plans to build in family garage. Youngster is studying various requirements,

regulations governing his project. Experts who have studied his concept tell him it will work. Young high school junior has been interested in space-oriented subjects for years. His father is employed at Nortronics Hawthorne.

## Dr. Hicks To Manage New Labs

Northrop Corporation has announced the formation of a new corporate research organization and the appointment of Dr. Donald A. Hicks to the new post of vice president — Corporate Research and manager of the Northrop Corporate Laboratories.



Dr. Hicks

The new organization will focus on longer range research into basic technologies on the corporate level as contrasted with product-oriented research which will continue to be carried on at the company's operating divisions and subsidiaries.

Research which is of interest to more than one division or subsidiary and is best accomplished through a central laboratory will be another important area of activity for the Northrop Corporate Laboratories.

The new laboratories will be established at the Hawthorne facilities and will become fully operational by August 1.

Dr. Hicks has been a vice president and manager of the Northrop Nortronics Applied Research department at Newbury Park, and will continue in (See DR. HICKS, page 4)

## HIS OWN UFO

### A Saucer Built for Two

Science fiction has had them for years. Television recently discovered their appeal. Still, factual information on building flying saucers just doesn't exist.

Rod Van Orden has discovered this.

Rod plans to build a flying saucer that will carry two people.

(Rod really calls his concept a lifting module, but forgives the layman who sees it as a flying saucer.)

More than two years has gone into research for his project. It involved talking with knowledgeable people and reading every bit of information brought to his attention. This led to concept and a model. The latter was fashioned of fiberglass-covered balsa wood, tin cans and miniature engine parts.

Aerodynamicists have told Rod he is on the right track, that his flying saucer will, indeed, fly.

So Rod has moved ahead into what he sometimes calls the "think and checkout" stage. He is weighing each possibility, each step, carefully. He is boning up on government regulations, aerodynamics, propulsion, lift, drag, resistance and a dozen other topics.

In time Rod will go ahead with his fabrication chores in the family workshop-garage.

Rod's father, Ray Van Orden, a senior engineer at Nortronics Hawthorne, will likely lend a hand.

After all, a 16-year-old high school junior should have a little help on a project of this magnitude.

"This is Rod's baby from start to finish," Mr. Van Orden says. "He's conceived it and will carry it through. I will just help a little now and then."

The Van Orden saucer concept calls for the use of two engines. They will pull air off the top surfaces and propel it at velocity through a series of prescribed arcs to exhaust below. This will lead to a vacuum (or lift) at the top and thrust (or push) at the bottom. Control will be possible by varying engine speeds and directing the airflow.

This is what Rod calls a "modified Coanda effect" concept.

(Coanda, a Rumanian, perfected a theory that fluids, or air, will adhere to the surface immediately outside the orifice from which it emerges. Water does this when poured slowly from a glass.)

Rod Van Orden is an unusual young man in many respects. He is an Eagle scout and was elected to scoutdom's Order of the Arrow. He climbed Mount Whitney when he was 14. He was one of the first scouts to receive a Space Science merit badge. And he is a leader in the TRW-sponsored Space Science Explorer Scout Post.

He once presented a thrust chamber design, based on the ion bombardment theory, to a major firm for evaluation. And last week he presented a paper (one of four from the Los Angeles area) at the NASA—National Science Teacher's Association Youth Congress in San Diego.

(See FLYING SAUCER, page 4)

## Communications Link Planned for Sealab III

A key information link between Sealab III and its surface support ship will be a communications and monitoring center designed and assembled by Northrop Nortronics.

The center, housed in two vans, will handle communications with aquanauts, as well as monitor biological and mechanical functions of the men and their equipment. Four systems — medical, communications, atmosphere monitoring and instrumentation recording — will be accommodated in the vans.

Sealab III is another in the Navy's series of tests conducted for the Man-in-the-Sea program. It is scheduled to take place late this year off San Clemente Island.

The vans, scheduled for delivery on July 16, are each 26 feet long and 8 feet wide. They will be assembled at Nortronics Anaheim. They will be installed on the deck of a 250-foot auxiliary technical research ship anchored above Sealab.

The vans are the first integrated communications and monitoring stations built especially for the Sealab series of undersea experiments.

One of the vans, a medical center, consists of a complete biochemical laboratory and an atmosphere monitoring station. The laboratory is equipped to perform a variety of biomedical tests and measurements, including blood and urine chemistry, and pulmonary functions. Except for those tests which must be conducted in the habitat, testing will be carried out on a daily basis throughout the dive.

Two gas chromatographs will continually sample the atmosphere in the Sealab habitat, a personnel transfer capsule and two deck decompression chambers. A closed circuit TV system will also link the monitoring station with the habitat.

The other van, housing command equipment, will have the communications systems and an office for the duty medical officer. The primary and secondary communications systems — which will link the habitat with the surface — each have complete audio facilities as well as closed circuit TV monitors. A video tape recording machine will also be installed in the van.

Instrumentation recording will be by strip chart recorders (for monitoring purposes) and by magnetic computer tape for engineering analysis.

More than 60 different environmental measurements will be taken in and around the Sealab habitat. Areas to be monitored include: atmosphere gas control equipment, divers' excursion air supply, gas storage equipment attached to the habitat, atmosphere conditioning equipment, electrical power, fresh water system, food storage refrigerator-freezer and hull heat loss.

Only a few tickets are still available for an NRC-sponsored visit to watch the World Champion Baltimore Orioles play the California Angels Sunday at Anaheim Stadium.

## Few Tickets Remain For Angels, Orioles

Terrace level box seats for this double header are available for \$3.50 each from Personnel Activities at Anaheim only.

## Page Relocates SHAPE Network, COMSAT Station

From Paris to Belgium and from the state of Washington to the Philippine Islands, Page Communications Engineers has been on the move.

Page, a subsidiary of Northrop, moved the elaborate communications network of SHAPE (Supreme Headquarters Allied Powers-Europe) from its previous headquarters, near Paris, to its newly built facility at Casteau, Belgium, without a moment's delay in communications.

On the other side of the world, in Tanay, in the Philippines, Page installed a satellite communications earth station which it had moved from the COMSAT site in Brewster Flat, Washington.

The new SHAPE communications system connects all elements of the NATO military command from northern Norway to eastern Turkey.

SHAPE was moved late last month. Page, as prime system contractor, installed the new

network within six months of the time it received the contract.

The \$3.5 million network provides three links, using tropospheric scatter techniques — bouncing signals off the troposphere, six miles above the earth — and three direct line-of-sight communications paths. The center of the system is at Casteau, with other sites in Belgium, England, the Netherlands and West Germany.

The relocation and installation of the COMSAT station was made in only 67 days. Page dismantled, packed and transported the station to the Philippines. It was taken to Clark Air Force Base, near Manila, and was shipped by truck the remainder of the way.

Page also is engaged as the prime contractor on the \$70 million integrated wideband communications system for the U.S. Army Strategic Communications Command and the Army Electronics Command in Southeast Asia.



# NRC-Sponsored 'Night at Disneyland' Nears



**DAWN OF HISTORY**—Among the newest attractions at Disneyland is the "Primeval World" setting, which includes a look at these brontosaurus herds, as they appeared 200 million years ago. They appear full-sized and three dimensional, through "Audio-Animatronics."

## All Shows, Attractions Included in Ticket Price

It comes only once each year—that big entertainment buy for the whole family.

This year it is April 29, a Saturday. The hours are 8 p.m. to 1 a.m.

And the event, of course, is Northrop Recreation Clubs' "Night at Disneyland."

Every attraction, every ride, every show is reserved just for Northrop employees and their families.

And a single price, \$3.75 per person, covers everything—admission and unlimited use of all shows, attractions and features. (Children under three are admitted free.) Which means, simply, you pay once for the entire night of entertainment. Everything within the "Magic Kingdom" is yours for the asking, except, of course, food and beverages.

Tickets are now available through all NRC ticket outlets.

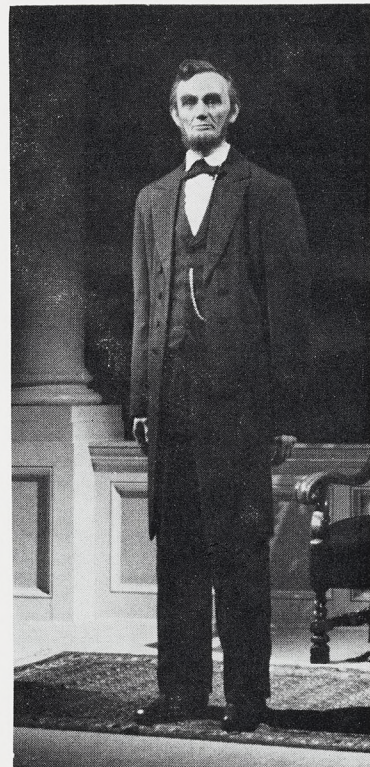
However, they must be obtained by Friday, April 28, since no tickets will be available at the gate.

Featured entertainment this year includes Bill Elliott and the Date Niders in the Plaza Garden; the Mustangs in the Oak Tavern; and Nellie Lutchter in the Golden Horseshoe.

New this year to Northrop families will be an exciting feature called "Pirates of the Caribbean," a breathtaking excursion into another period of time when pirates ruled their own domain around New Orleans.

And there are all the other features and attractions that make Disneyland America's official funland.

Only through the combined efforts of Northrop Recreation Clubs at three major divisions is this event made possible each year.



**MISTER LINCOLN**—Probably the most impressive and inspiring attraction at Disneyland is "Great Moments With Mr. Lincoln."

## Former Workers At Cape Kennedy Form 'Pioneers'

Northrop employees who have worked on missile, space or range programs at Cape Kennedy (formerly Cape Canaveral) may be eligible to join the Missile, Space and Range Pioneers (MSRP).

Membership in the newly formed organization is open to anyone who worked at the Cape between the late 1940's, when it was Patrick Air Force Base, and December 31, 1966.

The group's basic purpose, according to Lt. Colonel (USAF, ret.) Kenneth E. Grine, publicity chairman for the MSRP, "is to provide an opportunity for people who were associated with past activities at the Cape to meet and to get together."

A member of the MSRP Board of Advisors for 1967 is Richard E. Horner, Northrop Corporation senior vice president, who formerly worked for the National Aeronautics and Space Administration.

## AD ASTRA PER ASPERA

### Dr. Pfenninger in New York Conference

Dr. Werner Pfenninger, director of Boundary Layer Research at Norair, was one of the principal speakers at the International Congress of Subsonic Aeronautics held last week in New York City.

Dr. Pfenninger, who is one of the world's leading authorities in boundary layer control research, delivered a paper entitled, "Flow Problems of Swept Low Drag Suction Wings of Practical Construction at High Reynolds Number." Boundary layer control experts from Canada, Germany and France also delivered papers at the meeting, sponsored by the American Institute of Aeronautics and Astronautics.

M. S. Cahn, a Northrop Norair senior technical specialist, will speak tomorrow in a conference at the University of Wisconsin.

Mr. Cahn, who has been with Northrop for three years, will discuss "Application of Electro-Analogic Techniques for Determining Fluid Dynamic Forces on

Aerospace Vehicles."

The two-day meeting, to be held tomorrow and Friday, is titled "Modern Electro-Analogic Simulation Techniques in Engineering Design." It will be held on the university's campus, at Madison.

Mr. Cahn said his findings are

### Softball, Slo-Pitch Leagues to Begin

Softball action for the slow and not-so-slow gets under way next month under NRC sponsorship in the Hawthorne area.

Regulation play will feature a league of at least seven teams. Individual players are still needed, especially pitchers, to fill team rosters.

Two slo-pitch leagues are also planned, one using a 16-inch ball, the other a 12-inch ball. Plans call for rotating Saturday action with this group to include second shift participants. Players are also needed for these leagues.

the result of work done on lifting body aerodynamics for NASA's Ames Research Center.

\* \* \*

Other upcoming technical paper presentations include:

"Brazing Alloys and Techniques for Tantalum Honeycomb Structures," L. H. Stone, Norair Metallurgical Research, at the American Welding Society's annual meeting, April 24 through 28.

"Brake Forming of Titanium Ti-8Al-1Mo-1V Alloy," J. G. Louvier, Norair Metallurgical Engineering, at the Pacific Northwest Metals and Minerals Conference, April 19 through 21 in Portland.

"The Experimental Determination of Three-Dimensional Shock Surfaces," J. W. Headley, senior engineer in Norair Aerodynamics Research; for publication in the AIAA Journal.

"Dynamic Response of Curved Honeycomb Panels," by M. J. Jacobson of Norair Structures and Dynamic Research, for publication in the AIAA Journal.

## 'Commander' Line Introduced by Hallicrafters

The Hallicrafters Company, Northrop's newest subsidiary, has introduced a new line of marine communications products, called the "Fleet Commander" series.

The first product in the line is the VHF marine two-way radio, which was introduced at the 1967 Boat Show, in New York. Introduction of the unit marked Hallicrafters' first entry into the field of marine communications products.

The "Fleet Commander" line is designed for shipboard, portable or fixed use, with up to 30 miles of interference-free range. The fully transistorized units are recommended by the Coast Guard and the Federal Communications Commission for pleasure craft.

The unit has six FM channels and a seventh channel for a new network of VHF weather broadcasts.

The "Fleet Commander" series is expected to be available to dealers early in the summer.

## IN VIETNAM

### High Praise for Norair Men

Three Norair men have received high praise for their work in support of the F-5-equipped 10th Fighter Commando Squadron in Vietnam. They are Albert D. Christensen, Elbert Tomlin, jr. and Harold E. McVey, Norair Product Support representatives stationed at Bien Hoa, Vietnam.

Lt. Colonel William D. Mol, 10th FCS commander, in a letter to Frank Mathes, Product Support manager, declared:

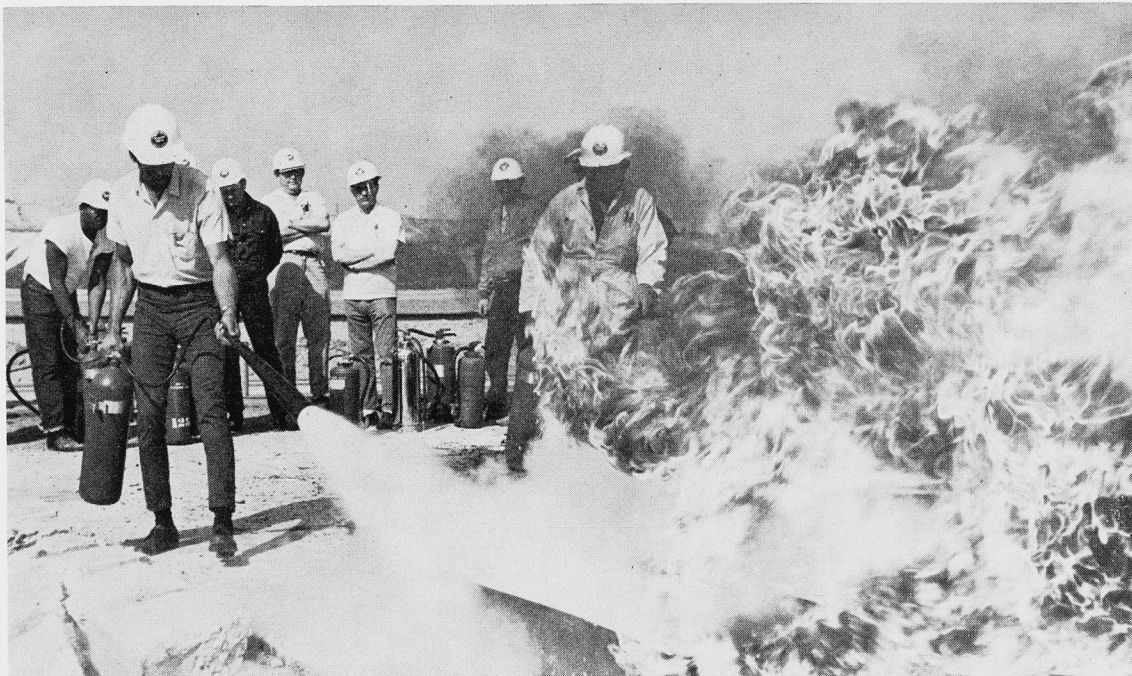
"These men were truly a part of the 10th Fighter Commando Squadron. I cannot decorate them, but I can write this to you and hope I have conveyed the outstanding contribution they have provided to this unit and to the mission of this wing.

"I have never before had the pleasure of working with three such knowledgeable and competent men.

"These men not only supported us during the workday, but lived with the officers in the cantonment area and were on call at all hours for assistance in problem areas.

"Mr. Christensen and Mr. Tomlin covered the flight line seven days a week. They worked the same hours as my men, and more when it was necessary. Their advice and assistance was always sound, and they earned the respect of everyone by their attitude.

"Mr. McVey spent long hours with the F-5 supply kit. The many days of '100 percent in commission' were a direct result of his dogged efforts to procure and deliver parts."



**FIREMEN AT WORK**—Members of a volunteer fire fighting team at Northrop Norair's Santa Fe facility view a demonstration on the

use of fire equipment, staged by the Los Angeles County Fire Department. Each volunteer completed 11 hours of training. See story on page 3.



Classified

Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private businesses are not accepted. The Northrop News reserves the right to edit or omit ads. Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 64. Ads are limited to one item and one ad per person each issue. Deadline is noon Wednesday, one week before publication.

**For Sale**

**Chevrolet**, 1959 2-dr., 6-cyl., auto., just o/hailed, \$250. Torrance, FA 8-7989. A

**Honda**, 1965, Super Hawk, 305 cc, 3 sprockets, Avon tires, Barnett clutch, \$475. Gardena, 324-7257. A

**Chevrolet**, 1957 2-dr. h/top, new brakes & auto. trans., 75,000 miles, \$85. L.A., OR 0-5990. A

**Dining Room Set**, blond, china closet, buffet, table & 6 uphol. chairs, \$185. Lennox, OR 7-6604. A

**Corvette**, 1962, 327-340 h.p., 4-spd., posi-traction, \$1,800. Hermosa Bch., 322-2544. A

**Home**, 3-bdrm., 1 1/4 bath, custom-built, cpts., dps., many deluxe bltin features, fenced rear yd., 3 fruit trees, 2 miles from Northrop Plant I, \$28,500 Hawthorne, 675-8829. A

**House**, 2-bdrm., 3 blocks to Norair, cpts., bltin auto. range & oven, fenced yd., patio, fruit trees, \$19,950. Hawthorne, 679-6982. A

**Boat**, 14' Runabout, trailer, Mark 30 o/board motor, \$380. Inglewood, OR 1-8672. A

**Phonograph AM/FM Radio**, GE portable, model RP2290, 1 yr. old, cost \$170; \$95. Torrance, 326-1382. A

**Honda**, 250 Scrambler, \$300. P.V. Pen., FR 2-2965. A

**Mercury**, 1957, continental kit, rear fender skirts, \$95. Inglewood, 671-8401. A

**Table**, hand wrought iron, 6 chairs, \$90. P.V. Pen., 377-9458. A

**Cemetery Plots**, in Evergreen sec., Inglewood Park Cemetery, dble. interment privilege avail., \$1,275 or sell single plot. Inglewood, 677-4256. A

**Ford**, 1959 sta. wagon, rebilt. eng., \$145. Lennox, 672-7417. A

**House**, 3-bdrm., 2 bath, fam. rm., cpts., dps., landscaped, near San Diego & Garden Grove Fwys., \$26,500. Garden Grove, 714-892-3546. A

**House**, 3-bdrm., tile bath, kitchen recently painted, enclid. patio, large yd., walking distance to college, school, shopping, \$18,900. Gardena, 323-6622. A

**Sofa**, 101" early American, \$45. Hawthorne, 675-7965. A

**House**, 2-bdrm., stucco, open beam ceilings, completely furn., 8 miles from Lake Elsinore, on tri-level 65'x160' lot, patio, \$10,000. Gardena, DA 4-1593. A

**Stroller**, never used, \$15. Manhattan Bch., 379-5024. A

**MGA**, 1958, new tires, new top, \$450. Redondo Bch., 379-4559. A

**Lincoln**, 1963 Continental, 4-dr. sedan, air cond., full power, \$2,250. Inglewood, PL 6-1812. A

**TV**, portable w/stand, brass w/dark wood trim, \$10. Inglewood, 674-5909. A

**Adding Machine**, 9 row R. C. Allen, \$35. L.A., AX 4-0727. A

**MG Midget**, 1962, \$795. Gardena, 679-3927. A

**Hollywood Bed**, w/boxspring & frame, single, \$35. Redondo Bch., 374-1124. A

**Snow Skis**, & binders, \$20. Torrance, DA 6-7232. A

**Boat**, 17' 8" raised deck cruiser, fiber-glassed, hvy-duty trailer, 2 engs., \$295. Venice, EX 9-2005. A

**Jeep Truck**, 1949, 52 F. head eng., new paint, r/h, 5 new 700x16 6-ply tires, 6'x7' bed, 4-whl. drive, extra complete eng., \$800. Hawthorne, 676-1471. A

**Sloop**, 14', fiberglass, Omega, tilt trailer, 3.6 h.p. Scott o/board, \$725. Long Bch., GE 4-9034. A

**Love Seat**, maple, 5' 35" wide, Naugahyde, white, olive, gold flowers, makes into bed, \$80. Gardena, DA 3-5497. A

**Motorcycle**, 1964 Tohatsu, 50 cc, extra parts, \$150. Manhattan Bch., FR 9-8248. A

**Crib**, w/mattress, \$25. Torrance, 370-4025. A

**Relaxicisor**, \$50. Hawthorne, OS 6-7623. A

**Oldsmobile**, 1963 Cutlass, 4 spd., p/s, \$1,288. Hawthorne, 679-6215. A

**Coffee Table**, \$15. P.V., FR 7-6435. A

**Home**, 3-bdrm., 1 1/4 bath, cpts., dps., patio, fenced-in back yard, within walking distance to new 747 bldg., \$160 mo. on 10% down, \$23,500. Inglewood, PL 5-6830. A

**Mercury**, 1956 h/top, \$150. Gardena, DA 9-4200. A

**Corvair**, 1960 4-dr., r/h, new brakes, tires & seat covers, \$295. Hawthorne, OS 6-5219. A

**Beer Dispenser**, kit-type, 1/4 or 1/2 keg capacity, \$50. Manhattan Bch., FR 2-6916. A

**3rd Member** for Ford, 3.50-1, fits 1957 or later, \$25. So. Gate, 862-1366. A

**Fiat**, 1963, model 1100D, 4-dr., heater, \$375. Huntington Bch., 714-842-6720. A

**Motorcycle**, Harley Davidson Sports Sprinter, 1933, 500 orig. miles, \$400. L.A., 776-1928. A

**Oldsmobile**, 1963 F-85 Cutlass, trans. radio, htr., floor console, \$1,150. San Pedro, 832-1886. A

**For Sale**

**Citroen**, 1954, Model II, \$350. Playa del Rey, 823-4167. A

**Renault Dauphine**, 1965 4-dr., r/h, auto. trans., \$799. Lawndale, 756-4702. A

**Sterilizer**, Evenflo, elec., \$5. Torrance, 321-3440. A

**Jeep**, 1962, CJ-5 model, 4-whl. drive, o/drive, Hudson steering, hubs, removable rear seat, extras, \$1,500. Hawthorne, OS 6-4896. A

**Ford**, 1958 station wagon, \$250. Gardena, 327-6992. A

**French Horn**, Olds, used about 2 yrs., \$195. L.A., 670-4761. A

**Lawn Spreader**, & seeder, near new, assembled, \$9. L.A., GR 3-3168. A

**Guitar**, elec., & amplifier, \$75. Inglewood, 675-6721. A

**Engine**, complete for 3.4 Jaguar, needs valve job & auto. trans., \$75. Panorama City, 894-3244. A

**Hi-Fi Console**, deluxe model, Grundig Majestic, \$100. Gardena, 635-3127. A

**Station Wagon**, 1962 Falcon, air cond., r/h, auto., \$690. Torrance, 324-2992. A

**Mustang**, 1965, h/top, V-8, auto., p/s, fact. air, r/h, o/size tires, new brakes, 27,000 miles, \$2,050. Redondo Bch., FR 5-7822. A

**Sailing Sloop**, 28', wood planked, inboard, Dacron sails, \$3,600. Marina del Rey, 823-1013. A

**Pups**, German shepherd, AKC reg., 5 mos. & 2 mos. old, shots & wormed, \$50. Lawndale, 675-6283. A

**Rug**, 9'x12' hook, oval, \$30. Gardena, 323-8905. A

**Pups**, Sheltie, 7 wks. old, sable & white, purebred, \$50 & up. San Pedro, TE 3-0742. A

**Surfboard**, 9' Sportflite, used little, \$75. Torrance, 326-3905. A

**Freezer**, Westinghouse, upright, self-defrosting, 65" tall, 30" wide, 3 yrs. old, \$150. Inglewood, 677-3994. A

**Plymouth**, 1966 Satellite, \$2,700. Inglewood, 671-1806. A

**Corvette**, 1965, 327 cu. in., 365 h.p., Americans, 8 1/2" Goodyears, 4.56, Hurst, headers, AM-FM, \$3,200. Hawthorne, OS 5-1365. A

**Cadillac**, 1962 Coupe de Ville, air cond., full power, \$1,850. Compton, NE 2-7635. A

**Lawnmower**, rotary, Craftsman Deluxe, 20", completely rebilt., \$25. Hawthorne, 676-7109. A

**Tires**, 2 Wards HST, 6.40/6.50-15, 7.35/15, less than 3,000 mi., \$30. Reseda, 343-9463. A

**House**, 2-bdrm., full dining rm., breakfast rm., fireplace, w/w cpts., dps., dble. gar., \$20,500. Inglewood, OR 1-3860, FR 5-5097. A

**Transmission**, Hydromatic, 3-spd., fits Chev. truck, 1955-1956, incl. flywheel, housing, torque converter, starter, all linkage, \$85. La Mirada, 944-3794. A

**Tires**, 2 b/wall, for Volkswagen, \$12. L.A., 754-9070. A

**Divan**, green, \$35. Compton, 639-8419. A

**Tape Recorder**, Sony model TC 200A, 4-track stereo, used about 10 hrs., cost \$189.95; \$100. Anaheim, 714-525-9633, 714-897-2857. A

**Home**, 3-bdrm., 2-bath, fireplace, bltin range & oven, cpts., dps., patio, encl. rear yd., 4 1/2% G.I. loan, \$26,950. Gardena, 329-2393. A

**Units & House**, 10 furn., Spanish design, on 75' x 200' lot, 5 1-bdrm., 5 2-bdrm., owner's house has 5 bdrms., 2 1/2 baths, extras, will carry 2nd T.D., \$148,000. Hollywood, HO 4-1084. A

**Sink**, plastic, for boat, \$3. Long Bch., NE 2-3489. A

**Table**, Duncan Phyfe, drum-style, \$7.50. Inglewood, 757-2955. A

**Chevrolet**, 1959 station wagon, Nomad, V-8, 4-dr., \$450. La Habra, 697-4927. A

**Stove**, 4-burner elec., Philco, \$35. San Pedro, TE 3-3826. A

**Speaker Enclosures**, Soundcraft, w/Stephens 120 for 12" & University tweeters, \$150. L.A., 732-4986. A

**Chevrolet**, 1956 Bel Air h/top, r/h, V-8, auto., 2-dr., \$250. Hawthorne, 644-1280. A

**Tires**, 4 5.90x13 Dunlop Road Speed, b/wall w/tubes, \$100. Santa Ana, 543-0435. A

**Falcon**, 1961, 2-dr., new tires, shocks, rings, 6-cyl., \$425. Garden Grove, 539-3925. A

**Top Boot**, for Chevelle, 1964 model, red, \$25. Manhattan Bch., FR 6-4677. A

**Cemetery Lots**, 4, Green Hills Memorial Pk., Holly section, \$800. Lakewood, 429-6843. A

**Pups**, Boston terrier, males, 7 wks. old, AKC reg., have all shots, \$85-\$100. Orange, 714-637-4194. A

**Falcon**, 1932 deluxe station wagon, 2-dr., \$600. Garden Grove, 714-897-0893. A

**Engine**, 1954 Chev. V-8 283, complete, \$35. Gardena, FA 1-3979. A

**Guitar**, Airline, \$25. Inglewood, 758-9182. A

**Honda**, 1965 305 Super Hawk Scrambler, bars, 2 helmets, extras, low mileage, \$400. Torrance, 326-6195. A

**Radial Arm Saw**, Craftsman, 9" moulding h/set, chuck, hvy. duty stand w/1 drwr., other extras, cost \$230, 1 yr. old, \$130. Hawthorne, 676-6122. A

**Hibachi**, Japanese ceramic, lge. size w/lid, still in crate, \$40. L.A., 670-5627. A

**Parade Mare**, American saddlebred palomino, gentle, 7 yrs. old, \$500. Lancaster, WH 8-1039. A

**Dining Room Set**, \$100. Gardena, DA 9-9621. A

**Vacation Trailer**, 1957, Jewel, 18', \$550. Hawthorne, 675-4924. A

**For Sale**

**Chevrolet**, 1966 Impala, 2-dr. h. top, vibrasonic radio, wire whls., 6-cyl., stick shift, \$1,900. Gardena, 327-2447. A

**Pickup Bumper**, nvy. duty, 70" wide, mount brackets 35" wide, trailer light switch, \$25. Diamond Bar, 213-964-7802. A

**Fishing Rod**, custom made, parabolic taper, 8 1/2', 8 conventional guides & tip top, single u/wrap & dble. o/wrap, 15 to 40 lb. line, 6 oz. lures, 6 mos. old, \$20. West L.A., 837-4596. A

**Home**, stucco, 3-bdrm., 1 1/4 bath, family rm., corner lot, cpts., dps., f.a. heat, air cond., bltins, covered patio, 2-car gar., sprinkler sys., fenced, \$24,950. So. San Gabriel, 288-6594. A

**Ford**, 1960 Sunliner convt., p/s, p/b, new battery, rebilt. trans., complete o/haul, \$650. Inglewood, 671-2950. A

**Owner's Unit**, 2 lge. bdrms., lge. living rm., 2 1/2 baths, plus 5 2-bdrm., 2 1/2 baths, studio apts., rec. rm., \$14,000 income, \$122,500. Inglewood, 670-6084. A

**House**, 4-bdrm., family rm., 2 1/2 baths, 1 acre, horses OK, near Northrop Ventura, \$35,000. Somis, 805-482-1186. A

**Goat**, purebred Toggenberg doe, weaning age, eligible to be reg., \$25. Rolling Hills, FR 7-3487. A

**Pups**, poodle, miniature, black females, AKC, \$60 & \$80. L.A., WE 3-3051. A

**Roller Skates**, 2 pr., size 5, ladies', \$3. P.V. Pen., FR 8-1863. A

**Plymouth**, 1965 Fury station wagon, 5-yr. 50,000 mile guarantee, air cond., new tires, \$1,800. Lakewood, HA 9-6036. A

**Apt. Bldg.**, 9 units, \$12,480 yearly gross, \$15,000 dn., \$105,000. Torrance, 325-9832. A

**Volkswagen**, 1961 Kombi bus-transporter, engine rebilt., set up for sleeping or w/seats, new brakes, battery, tape deck, \$685. Pac. Palisades, 454-5985. A

**TV**, 21" screen, black & white, RCA Deluxe console, \$40. Hawthorne, FR 4-3376. A

**Snare Drum**, Tiger Eye, by Pearl, \$30. Hawthorne, OS 6-9914. A

**Ham Antenna**, Mosley TA-33, tri-band beam, & AR-22 rotator w/100 ft. of RGBU cable, \$45. L.A., 645-1274. A

**Chevrolet**, 1958, 348 eng. recently o/hailed, new uphol. & paint, r/h, auto., \$400. Hawthorne, 675-8262. A

**Diamond Engagement Ring**, w/wedding band, over 1/2 carat, white gold, \$150. Redondo Bch., FR 2-7851 between 10:30 a.m. & 3 p.m. A

**Lot**, level, terms, \$23,500. P.V. Ests., FR 5-0867. A

**Freezer**, Coldspot, 5 yrs. old, \$75. Torrance, DA 9-3721. A

**Piano**, Chickering baby grand, chestnut color, \$900. Gardena, 327-6849. A

**Charter Membership**, flying club, Bonanzas, Cessna 172's or Ecoupe, well equipped, \$450. Torrance, 373-1617. A

**Travel Trailer**, 1966 Ideal, self-contained, 17 1/2', used 2 mos., \$2,500. Whittier, 696-8188. A

**Couch**, early American, wing-back, \$35. Wilmington, 830-6796. A

**Chrysler**, 1962 Newport convt., 42,000 miles, 1 owner, good tires & top, \$850. Gardena, DA 9-0478. A

**Prom Dress**, worn once, size 8, \$10. Torrance, 320-2071. A

**Corvette**, 1964, 4-spd., fastback, fact. air, 327 cu. in., AM-FM, \$3,199. Manhattan Bch., 545-2742. A

**Mustang**, 1966 convt., 289 V-8, auto., p/s, deluxe radio, many other extras, \$2,350. Manhattan Bch., 379-3487. A

**Home**, 3-bdrm., cpts., dps., tile bath, 50' x 150' lot, R-2, \$22,000. No. Redondo Bch., 370-0315. A

**Wanted to Buy**

**Trailer** or dry storage cradle for cal. 20 boat. Redondo Bch., 375-5838. B

**Go-Carts & mini-bikes**. Huntington Bch., 865-1411. B

**Stamp Catalog**, Scotts European, 1966, used. L.A., 670-1787. B

**Accordion**, 120-bass, piano size keys, good condition, reasonable. Torrance, 371-9651. B

**Greenhouse**, small, either lean-to or free-standing. Port. Bend, 377-3482. B

**For Trade**

**Piano**, spinet w/bench, trade for tape recorder. L.A., 757-3595. C

**Free (to Be Given Away)**

**Kittens**, 5 wks. old, 3 black & white, 2 calico. Redondo Bch., FR 4-1509. D

**Rentals Offered**

**Home**, 3-bdrm., 2-bath, modern, completely furn., Lake Arrowhead, \$100 wk. Gardena, 532-6109. E

**Apt.**, unfurn., 2-bdrm., 1 1/2 bath, w/w cpts., dps., bltins, \$125. Inglewood, 644-2565, 672-1890. E

**Want to share** 2-bdrm. & den home w/lady, 1 block from beach, \$20 wk. Manhattan Bch., 545-4694. E

**Roommate** needed to share 2-bdrm. furn. bach. apt., pool, carport, 3 blocks to Nortronics Haw., \$70 mo. Gardena, 532-5086. E

**Duplex**, rear, 2-bdrm., unfurn., gar., garb. disp., hwd. flrs., fenced backyard, 1 child OK, no pets, 3 miles from Northrop, \$95 mo. L.A., PL 5-0435. E

**Vacation Cabins**, Lake Gregory & Crestline, \$25 w/ends; \$60 wk. Venice, EX 1-2040. E

**Cabin**, Big Bear Lake, sleeps 7 to 9, \$18 w/nd; \$50 wk. Bellflower, TO 7-0662. E

**Rentals Offered**

**Cabin**, Green Valley Lake, \$30 w/nd; \$55 wk. Torrance, 320-2002. E

**Apt.**, 1-bdrm., pool, deluxe, \$95 mo. Redondo Bch., 376-2117. E

**Apt.**, 1 & 2 bdrm., cpts., dps., bltins, closed gars., 5 min. to Nortronics P.V., 15 min. to Norair, \$125 & \$85. Torrance, 375-2091, 375-9397. E

**Apt.**, 1-bdrm., pvt. patio, carport, laundry rm., adults only, \$90 mo. furn.; \$78.50 unfurn. Gardena, DA 9-9195. E

**House**, rear, 2-bdrm., utils. pd., \$110. Lawndale, 322-5941. E

**Vacation Cabins**, Idyllwild, 1 & 2 bdrms., fireplace, stream, pake, \$17 to \$35 w/nd; \$45 to \$70 wk. L.A., PL 4-5288. E

**Bachelor Apt.**, 1-bdrm., unfurn. & single, incl. stove, refrig., cpts., dps., closed gar., 1/2 block to ocean, from \$100 mo. Redondo bch., FR 8-7905. E

**House**, 3-bdrm., fireplace, cpts., paneling, lge. fenced yd., dble. gar., near beach, 15 mins. to Northrop, \$175. Redondo Bch., 376-1491. E

**Duplex**, unfurn., 2-bdrm., disp., lawn care & water pd., 8 mins. to Norair, \$110 mo. L.A., PL 4-1964. E

**Personals**

I wish to thank all of Ernie's friends at Northrop for the donations to the Masonic Home & the City of Hope. Mere words cannot express my thanks & appreciation. KUBY SHARP. L

I wish to express my sincere appreciation for the help & expressions of sympathy extended to me by my friends at Northrop over the loss of my brother. C. T. HYNES. L

Words cannot express our deep-felt appreciation of the understanding of our friends at Nortronics in the loss of our son, Ray Evans. Our sincere thanks for your kind expressions of sympathy cards, flowers & remembrances. RICE & MINNIE EVANS. L

We wish to thank all our wonderful Northrop friends for their kind expressions of sympathy & donations to the City of Hope in memory of Stevie, our beloved son & brother. BOB & BOB, JR. BOWDITCH. L

**Piano-Organ Lessons**, Thousand Oaks & vicinity. Fillmore, 805-524-0466. L

AT SANTA FE

Volunteer Firemen Ready

A new 11-member volunteer fire fighting team is now available for duty at Northrop Norair's new Santa Fe facility.

The men, representing two shifts, took on their added responsibilities this month after completing a special training program.

They are Andy Grabski (group leader), Albert Graves, Isom McDonald, Edison Forward, J. S. Black, Victor Heiner, Antonio Queiros, George Steel, Fred Risle, Earl Mercer and Harold Farland.

E. J. Sowle, Norair fire prevention specialist, conducted most of the 11-hour training program, which included such topics as fire prevention methods, the location and use of fire fighting equipment, and general knowledge about the Santa Fe sprinkler system.

Climaxing the training was a series of live fire fighting drills staged at the Los Angeles County Fire Department facility in the area and conducted by Cap-

Rides and Riders

**Rides Wanted**

**7 a.m. — 3:42 p.m.**

**Arlington & 220 St.**, Torrance. N. A. Williams, 328-6839.

**7:30 a.m. — 4:12 p.m.**

**Manchester & Prairie**, Inglewood. Girtha Hestilow, Norair, ext. 1611, 672-9306.

**8 a.m. — 4:42 p.m.**

**Eagle Rock & York Blvd.**, Los Angeles. Ramesh C. Taneja, Norair, ext. 1006, 1007, 254-7045.

**Crescent & Moody**, Cypress. Floy Dean Shupenko, Norair, ext. 2123, 527-3535.

**8 a.m. — 4:45 p.m.**

**Long Beach to Hawthorne**. Walter Bateman, Nortronics Haw., ext. 597, 434-0885.

**Rides Offered**

**8 a.m. — 4:42 p.m.**

**Imperial & Beach Blvd.**, La Mirada. Robert B. Wells, Nortronics Haw., ext. 2515, 943-6317.

**8 a.m. — 4:45 p.m.**

**Long Beach to Hawthorne**. Walter Bateman, Nortronics Haw., ext. 597, 434-0885.

**For Sale or Trade**

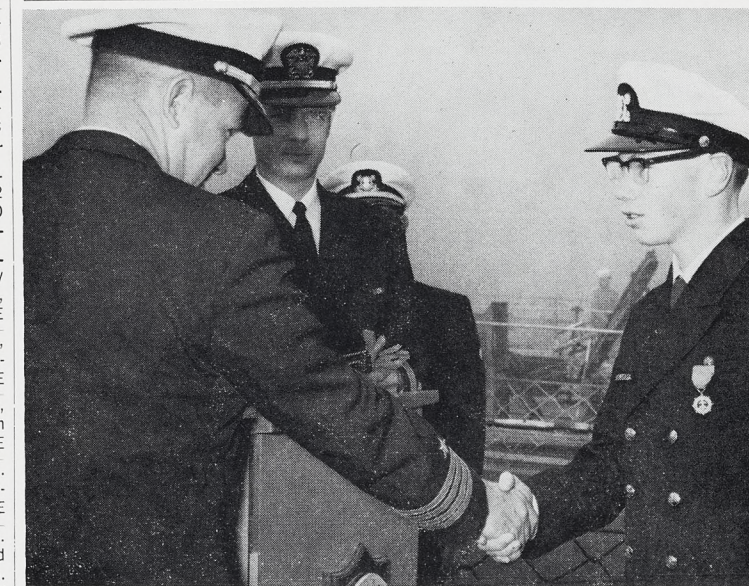
**Wet Suit**, rubber, & access., worn few times, med.-large, hood, mask w/exhalation valve, \$50 or trade for house painting. Torrance, 323-4257. M

**Buick**, 1961 Invicta h/top, full power, fact. air, auto. trans., recent eng. work & brake reline, \$850 or trade for Volkswagen of equivalent value. Los Alamitos, 431-8624. M

**Router**, hi-powered, Stanley mod. R2-L & GA-65A base, 115 v., 60 cy., 15 amp., \$75 or trade for .22 cal. guns or 20 ga. shotgun. La Mirada, WH 1-1865. M

**Acreage**, 5 acres north of Rosamond, 1 1/2 miles west of proposed freeway, \$3,450 or trade for car or \$800 cash for equity, bal. payable \$26.50 mo. incl. 6% interest. Torrance, FR 8-1026. M

**Offenhauser Manifold**, 3 Duce's for Ford 292 cu. in. or 312 cu. in., progressive linkage & fuel lines, \$50 or trade for access. for 1959 Ford. Redondo Bch., FR 9-6938. M



THE HIGHEST AWARD—Alex Weir, III (right) receives the Quartermaster Badge, highest honor given in Sea Scouting, from Navy Captain J. E. Lyon. The youth is the son of Dr. Alex Weir, jr., Corporate senior scientific and technical adviser.



## NSL Wins Contract For Venus Studies

Northrop Nortronics will join with Avco Space Systems Division, Lowell, Massachusetts, to study the feasibility of a spacecraft fly-by of Venus in 1972. Part of the study will be conducted in Hawthorne by Nortronics Systems Laboratories.

The \$240,000 contract was

awarded by Jet Propulsion Laboratories, Pasadena. The six-month study, to be headed by Avco, is expected to begin in May.

Under terms of the contract, now in negotiation, Avco and Nortronics will investigate all aspects of launching a Mariner class spacecraft to Venus. At the planet, a capsule system weighing 100 pounds or more, will separate from the spacecraft and enter the Venusian atmosphere to take direct measurements during the descent to the surface.

The capsule will not be designed to survive the landing on Venus. Other guidelines for the study include the use of the Atlas Centaur as the launch vehicle and an approximate over-all weight of 1,200 pounds.

## Life Insurance Approved by Credit Union

Life insurance protection for Northrop employees receiving loans from the Northrop Credit Union is now being provided at no additional cost.

This new service was approved last month by the Credit Union board of directors. It became effective April 1.

Coverage extends not only to loans issued after that date, but all loans currently active, to a maximum of \$10,000.

Loan holders below the age of 70 years are covered for the full balance of the loan.

Here's how it works:

Suppose an employee, 45 years of age, who has been granted a loan, dies. Life insurance automatically pays the balance of that loan. Normally, the individual's heirs would be liable for the balance.

The benefits are obvious.

The borrower, and his family, are assured no large debt (the loan) will be incurred in case of his death. And Northrop Credit Union shareholders are protected from possible loss.

Insurance of this type is available, and is often required, with other lending agencies. However, it normally costs the borrower, either in flat rates or increased interest rates.

Northrop Credit Union has added this protection as another in its long list of services to members. It is another reason why it pays to do business with fellow employees who are the Northrop Credit Union.

## FLYING SAUCER

(Continued from page 1)

Rod plays with "The Debonaires," a school band specializing in the "big band era" tunes.

Young Van Orden became interested in science and aerospace projects when the senior Van Orden was employed by Bell Aircraft. He asked his father for every bit of available information and augmented this with study and reading.

He has fashioned other space-related projects in both models and working forms.

Rod Van Orden is now competing for a Bio-Medical scholarship at USC. He wants to major in aeronautical engineering.

His greatest thrill was meeting and talking with Astronaut John Glenn.

## Anaheim Blood Drive Called 'Productive'

Volunteer donors from two shifts at Nortronics Anaheim increased Northrop's credit with the American Red Cross Blood Bank by 162 pints, March 24.

This annual visit was one of the most productive in years. Blood is available to employees and their immediate families through this benefit program.



*SAFETY MERIT BADGE quest brought these Boy Scouts to Nortronics Anaheim recently with two of their adult leaders, both Northrop employees. Alvin Van Der Most,*

*safety engineer, shows visitors finer points of safety glasses. They are from (left) Gene Roach, Zee Marshall, Paul Armstrong, Al Roach and Tom Lafferty.*

## IN FEBRUARY, MARCH

### Three Earn 25-Year Pins

Anniversary observances occurred frequently during February and March as Northrop Nortronics personnel on the West Coast marked the passing of major Northrop service milestones.

Fifty-four employees including six women, became eligible for 15-year service pins during the period. In addition, there were three 25-year pins and seven 20-year pins due.

The 25-year veterans are Ralph Brant, Harry Belcher and William Brooner.

James Hock, Gordon Phillips, Russell Gimbrone, William Levens, Robert

Loring, Rubye Ratliff and Leslie Coyle are the 20-year veterans.

The 15-year veterans include Donald McInnis, John Lahn, Ivan Lane, John Collins, Charles Hargrove, David McKinney, Thomas Nusbickel, jr., Inez Willauer, Howard Brown, Raymond Gebler, Arthur Boston, Luverne Wieser, Bill Perkins.

Glenn Tyte, Edward Steliga, Alvin Goodale, Edward Paul, Helen Grogan, Nita Payne, John Collins, Madaline Tracy, Kenneth Potter, Lyle Vance, Boyce Ahlport, Davis Lipscomb, Stanley Ryan, Stanley Dow, Genevieve Fleming, Donald Taylor, Jesse Macias, Robert Redwitz, Leonard Dines.

Harry Barrett, jr., John Spirnak, David Harvey, Bert Beard, Carl Carlson, Ulysses Basham, Edward Stepnicka, Joe Williams, Charles Smith, Kenneth Soukup, Richard Yoern, Hugo Eppolite, Joseph Khalil, Frank Caramelli, Bruno Vigo, Robert Tanquary, Elaine Sturtridge, Alice Carlson, Donald Anderson, Edward Wojnar, R. M. Haney and John Hauthenthal, jr.



Mr. Brooner



Mr. Brant



Mr. Belcher

## Macias Receives School District Commission Post

Frank Macias, Northrop Systems Laboratories Bioastronautics Laboratory staff member, has been appointed to a new El Rancho Unified School District Personnel Commission.

Mr. Macias was selected for the job by Dr. Max Rafferty, California's superintendent of schools.

The new commission will administer the school's classified employees' Civil Service merit system.

Mr. Macias is also a member of the board of directors of the Mexican-American Opportunities Foundation of Los Angeles and a member of the State Personnel Board of Examiners.

## DR. HICKS

(Continued from page 1)

that capacity while the new organization is being formed. Prior to organizing the Applied Research department he was vice president — Technical of the Ventura Division.

Dr. Hicks holds bachelor, master, and Ph.D. degrees in physics, all from the University of California at Berkeley. He was graduated with honors and was elected to Phi Beta Kappa.

He came to Northrop in 1961 from The Boeing Company where he was a member of that company's technical management team. He previously served as a research physicist with both the Lawrence Radiation Laboratory and the California Research and Development Corporation.

Work of the Northrop Corporate Laboratories will be guided by a newly-formed Research Advisory Council composed of division general managers, subsidiary presidents, senior technical officers of each division and subsidiary, corporate vice presidents of Marketing and Forward Planning, and Dr. Hicks. Richard E. Horner, corporate senior vice president — Technical, is chairman of the council.

## Gem Club Members To Work at Show

Northrop Gem and Mineral Club is expected to play a key role in the Arts and Crafts Demonstration Show over the coming weekend at Hawthorne Memorial Center.

This event, sponsored by the Fine Arts Association of Centinela Valley, will be staged from 10 a.m. to 6 p.m., Saturday.

Northrop demonstrations and display will include stone cutting and polishing techniques, black-light show case, and outstanding collections.

Other arts and crafts will be demonstrated on a continuous basis. Tickets sell for \$1 each and are available through Northrop Personnel Activities offices in the Hawthorne-Palos Verdes area.



*CHARTER PRESENTATIONS to two Junior Achievement firms counselled by Nortronics Anaheim volunteers were made recently by*

*Frank Lynch (left), Nortronics vice president and manager of Operations. Receiving the charters are Chris Thayer and John Brown.*



# NORTHROP NEWS

NORTHROP NORTRONICS

Published biweekly by Northrop Corporation, Beverly Hills, California

Vol. 25, No. 8

April 26, 1967



*A MOUSE IN A JAR—Dr. Jerome Gambino (left) of Northrop Nortronics Systems Laboratories discusses a bioastronautics experiment with Dr. Erwin Moon (second from left), director of the Moody Institute of Science. Dr. Moon*

*and his son, James (right), visited Nortronics Hawthorne recently. With them is Reverend John Chambers of Norair. Dr. Moon narrated all "Sermons from Science" films during a luncheon hour series at Northrop.*

## 'Mr. Clean' Drive Set To Begin

If you see some guy walking around in a white T-shirt, a bald head and wearing a large earring, don't call a guard—he may be your boss.

If it is, he's just over-playing his role as "Mr. Clean."

He and three other Nortronics men will be named soon to spearhead a profit-improvement program called "Operation Clean." The "Mr. Cleans" will be making their debuts at the Johnson building, NSL building and Palos Verdes. Each man will direct his facility's campaign. Anaheim held its "Operation Clean" last month.

Over-all coordinator of the operation, which begins May 1, is Roger M. DiJulio, assistant to the treasurer. The general goal of Operation Clean is to reduce Nortronics' investment in supply inventories.

"Some of our specific goals," Mr. DiJulio said, "are to get rid of inactive files, obsolete manuals and forms, and to identify files, cabinets and other furniture that is surplus."

"We're also hoping to keep stationery store inventories at a more realistic level by asking everyone to keep just one week's worth of supplies on hand."

Full details of Operation Clean, including guidelines and measures of accomplishment, will be announced within the next few days, Mr. DiJulio said.

In the meantime, if your boss shows up wearing a "Mr. Clean" outfit but is riding a big white horse, tell him to get off it.

## CHIEF WARRANT OFFICER

### Hill Called to Active Duty

Orion (Jim) Hill, a Manufacturing associate at Nortronics Anaheim since 1952, this month became Chief Warrant Officer O. J. Hill, U.S. Army.



Mr. Hill

Mr. Hill was called to active duty for a period of three years with the 1st Armored Division now at Fort Hood, Texas. He is a veteran of two periods of active duty and a long-time member of the National Guard. He enlisted in the U.S. Navy in 1938 and survived the attack on Pearl Harbor. At the conclusion of World War II he joined the National Guard

and was called to duty in Korea with the 40th Infantry Division.

Mr. Hill and his wife journeyed to Hawaii last December to take part in the 25th anniversary ceremonies commemorating the attack on Pearl Harbor.

## Toastmasters Installed

The Northrop Toastmasters installed 1967 officers at a dinner early this month.

Taking office were: Felix Dunnett, president; David Duket, administrative vice president; Jack Wilson, educational vice president; Walt Darby, secretary; Al Weinstein, treasurer; and Jim Gnotta, sergeant-at-arms.

## 'A MASSIVE PROGRAM'

# Navy, Nortronics Team up on 'Man-in-the Sea'

Northrop Corporation has joined the U. S. Navy in a massive program to conquer the seas.

As prime engineering support contractor for the Navy's Deep Submergence Systems Project (DSSP), Northrop's Nortronics Division is working for the Navy to assist in the development of rescue and salvage capabilities in deep ocean environments.

One part of the Navy's multifacet DSSP is the intriguing experiments aimed at allowing man to live and work deep in the ocean for extended periods of time.

Next winter the Navy will conduct its Sealab III experiment off San Clemente Island, about 75 miles southwest of Los Angeles. This will be the latest in a series of tests conducted by the Navy

in its Man-in-the-Sea program.

Five teams of aquanauts, eight in each team, will be selected by the Navy to participate in the experiment, the most complex and sophisticated such ocean test ever attempted.

Nortronics will provide engineering support for Sealab III, and also build a specially designed communications and monitoring center. This center will serve as the key link between aquanauts and the surface ship.

Each team of aquanauts will spend 12 days in the sea, living and working at 430-foot depths. A cylindrical habitat, 12 feet in diameter and 57 feet long, will house the aquanauts.

George Mangurian, Nortronics DSSP program manager, said Sealab III will enable the Navy to

## Growth, Diversification Predicted by Stevens

Hard work by Northrop Nortronics personnel in the past two years has resulted in the division now enjoying a "very satisfactory position," Frederick Stevens, Corporate vice president and Nortronics general manager, told members of the Nortronics Management Club last week.

Mr. Stevens reviewed the division's business outlook and the status of major programs at the meeting, held at the Long Beach Elks Club.

"Nortronics now has major programs in-house that show ma-

jor potential in the years to come," Mr. Stevens said.

"Our present objective," he said, "is to develop a plan which will provide future work independent of the fluctuations inherent in the aerospace industry."

"The plan starts with an understanding of the needs of our customers and our capabilities. We will recognize the things which could happen to change our status and find ways to offset them."

Mr. Stevens referred to recent comments by Thomas V. Jones, Northrop president and chairman, saying "his comments are based on sound business planning."

"At no time in our company's history have we had a better grasp on the business picture for Northrop," Mr. Stevens said.

"The acquisition of Hallicrafters is the result of planning. The future requirements of communications systems are based directly on the number of people and the economic basis of the world. It will grow, and the technologies of Nortronics and Hallicrafters will be melded to assure Northrop's growth in the communications field."

Mr. Stevens said the C-5A inertial Doppler navigation program offers significant opportunities for Nortronics.

"We are 14 months into the C-5 program," he said, "and I can report to you that the difficult objectives of the program are being met. Our schedule is holding firm, and our technical problems are being solved."

"We have a lot of people working on the C-5A program who know their job and are getting it done."

Mr. Stevens also reported on major programs at Anaheim.

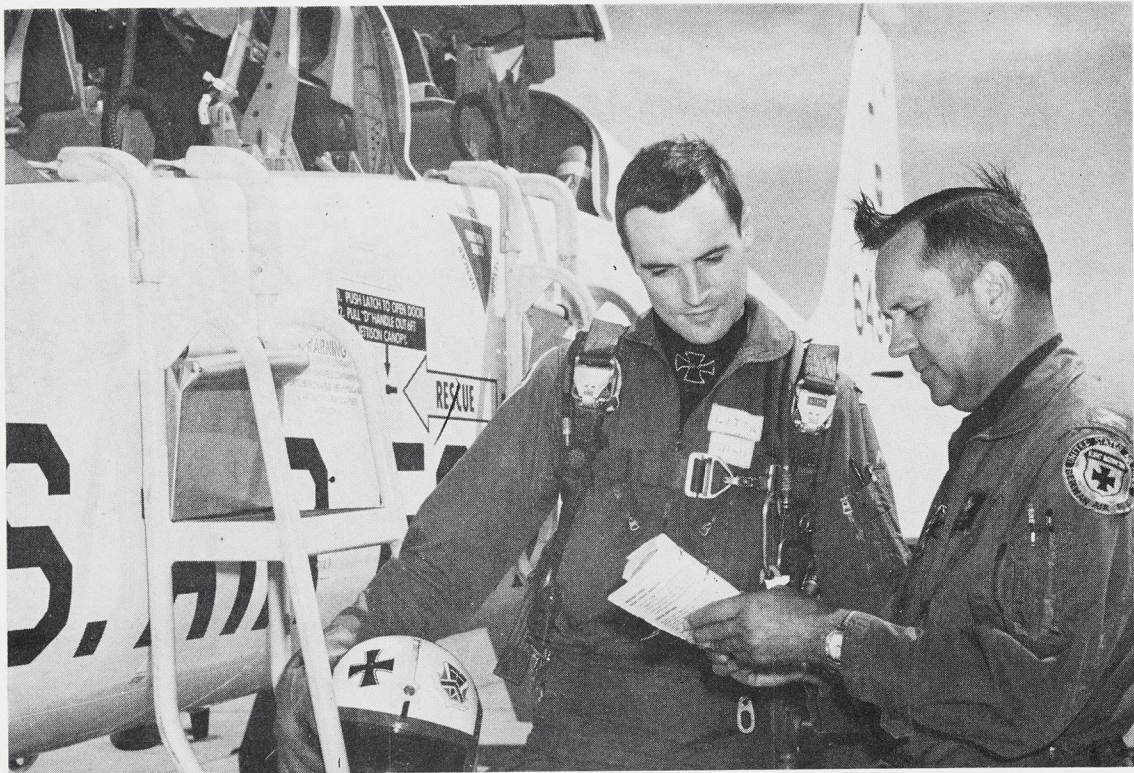
## Orientation Ends for AF Men

Four Air Force officers assigned to Northrop Corporation for a nine-month Industrial Management and Training course spent two weeks this month in a general orientation of Nortronics West Coast activities.

The officers, Captains Conrad Luecke, Daniel McIntosh and Joseph Pucci, and First Lieutenant John McCabe, are taking part in an Air Force Training With Industry program sponsored by the Air Force Institute of Technology.

During their two-week Nortronics orientation, the officers met with top Nortronics management at Palos Verdes, Anaheim, Hawthorne and Northrop Systems Laboratories. They received thorough briefings on activities at each point with emphasis on understanding management principles, policies, procedures, problems and problem solving techniques.





GERMANY AND THE T-38—Master Sergeant Ulrich Litta (left) of the German Air Force is the first German student to fly a Northrop-built T-38 at Sheppard Air Force Base, Texas. With him is Colonel Paul M. Yeager,

deputy commander for Operations at Sheppard. Sergeant Litta is one of 23 students in the pilot training program from West Germany. They will graduate in August.

## DISNEYLAND OUTING

### A 'Passport' to Happiness

Your "passports" are ready now.

Pick them up before the close of the first shift Friday. Collect the family. Come along.

We are bound for an unusual land. Laughter prevails there. Fun reigns supreme. It is for the young at heart of all ages.

Saturday night (8 p.m. to 1 a.m.) is a special time there. Only Northrop families will be admitted. They will have free and unlimited use of all the attractions.

Your "passport" costs only \$3.75. You can get it at Personnel Activities outlets through Friday only.

It will open all the gates—parking, admission, rides, shows and special features. You pay extra only for food, beverages, shooting galleries and souvenirs.

So act now and join the exodus to Northrop Recreation

Clubs' "Night At Disneyland" Saturday, April 29.

More than 25,000 Northrop employees, members of their families and guests have taken part in NRC visits to the "Magic Kingdom" over the past three years.

### Karate Instructor Wins Championship

Northrop's Karate Club, its instructors and members, have made news recently.

"Chuck" Norris, the club's instructor, recently won the Grand National U.S. and Canadian championships in competition held in New York. NRC Commissioner "Willie" Norris, "Chuck's" brother, took third place in the California State championships in San Francisco.

Karate classes are now being held each Monday and Wednesday at the NRC Clubhouse.

### Chavez Regals Win NRC Cage Championship

The Chavez Regals have won the Class A NRC basketball championship with an 8-2 league record, including a 60-48 playoff win over the Elite.

The Regals, managed by Dan McCarthy of Norair, were part of a six-team league, which played in two three-team divisions.

League play began in December and continued until this month. Games were played at Lawndale High School, Leuzinger High School and Clay Junior High School. Players were from Norair and Nortronics.

Members of the winning Regals were Don Sayles, John Patierno, Al Taglieri, John O'Hara, Willie Strite, Les Emerson, Ed Lauchner, John Moore, Chuck Boyd and Warren Walski.

## Retirement Club Plans Three-Day Reunion

Northrop Corporation retirees everywhere have been extended a special invitation to take part in the first Grand Reunion of the Northrop Retirement Club.

It will be staged this weekend, beginning Friday and extending through Sunday.

Planned are a variety of events to suit many tastes. Participants may take part in all or a part of the total program, according to Retirement Club President Walt Brophy.

Friday night at 6:30 a banquet and dance to be held at NRC Clubhouse, Hawthorne, kicks off the affair.

Saturday the retirees will join Northrop families for their annual "Night at Disneyland" excursion. Buses just for retirees and their escorts will depart Hawthorne at 6:30 p.m. and return around midnight.

Sunday a special reception will be held at NRC Clubhouse,

Hawthorne, between 12:30 and 4:30 p.m.

"We hope all of our retired friends will turn out for one or all of these events," Mr. Brophy said. "We especially invite everyone to drop by for the reception."

Open to all Northrop retirees and their escorts, the Retirement Club currently has a mailing list of more than 500 individuals. They reside in 157 cities in California as well as 14 states and three foreign countries.

Monthly meetings are held and special activities planned periodically. The next regular meeting will be at 1 p.m., May 17 at NRC Clubhouse, Hawthorne.

### Has Anyone Seen Cecil Ferguson?

Has anyone seen Cecil Ferguson lately?

If not, how about Robert Bassett Hughes, or V. E. Cull?

They are three of seven former Northrop employees being sought by the Corporate Retirement office. In most cases, they may be eligible for retirement benefits.

In addition to Mr. Hughes, Mr. Ferguson and Mr. Cull, officials would like to find O. F. Snyder, C. L. Yarbrough, Mrs. C. Cadrobbi and Mrs. M. F. Mathabel.

Mr. Yarbrough, who owns a mobile home, was living in Porterville, and then in Susanville, but attempts to contact him have failed.

Those who may have information on the "missing" seven have been asked to call extension 302 at the Corporate offices.

### NRC Universal Studios Tour Ducats Available

Tickets for Northrop's annual day at Universal Studios go on sale today at all NRC ticket outlets at the discount rate of \$2.25 for adults and \$1.25 for children (ages 5 through 11 years).

The date is Saturday, May 27, and the hours 9 a.m. to 4 p.m.

### Radio Club To Publish Member List

Amateur radio operators from throughout Northrop Corporation are being sought by the Nortronics Anaheim Radio Club for the purpose of compiling a Northrop-wide "ham" radio roster.

The club plans to issue the initial roster from information supplied by individual operators, then update the roster every six months or less.

Northrop operators are being asked to supply the following information: name, division or subsidiary, department number, call letters, license class, bands or modes operated, times and days normally operating, and whether their station is active or inactive.

Send this information to Vaughn Peak in care of NRC at Nortronics Anaheim by June 1. Mr. Peak will forward copies of the compiled rosters to those supplying information.



A NIGHT FOR FUN—Northrop employees and their families enjoy themselves in a picture taken at last year's Northrop Night at Disneyland. An even bigger turnout is anticipated for this Saturday, when the park will be open only to Northrop families.



NRC CHAMPS—The Chavez Regals are the 1966-67 NRC Basketball champions, by virtue of an 8-2 league record, and a 60-48 playoff win over the Elite, another NRC team. Team members are (front row, from left) John

O'Hara, Les Emerson and Willie Strite, and (back row, from left) Ed Lauchner, Warren Walski, Chuck Boyd, John Moore and Dan McCarthy, the manager. Not pictured are Don Sayles, John Patierno and Al Taglieri.



# Classified

Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private businesses are not accepted. The Northrop News reserves the right to edit or omit ads. Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 64. Ads are limited to one item and one ad per person each issue. Deadline is noon Wednesday, one week before publication.

**For Sale**

**Chrysler**, 1965 Newport, 4-dr., r/h, fact. air, p/s, p/b, in warranty, \$2,350. Torrance, 325-8211. A

**Rambler**, 1960 4-dr., 6-cyl., \$250. Gardena, 676-7256. A

**Chevrolet**, 1954 4-dr., 6-cyl., r/h, new uphol., \$200. Box 801. A

**Washer-Dryer** Comb., Bendix elec., \$14. Gardena, 324-4817. A

**Tape Recorder**, Knight monaural, portable, 2-spd., 2-track, \$45. Hawthorne, 675-6963. A

**Evaporation Cooler**, for auto., \$15. P.V. Pen., 377-3806. A

**Oldsmobile**, 1959 Dynamic 88, r/h, w/w, new paint, \$375. Inglewood, 679-9891. A

**MGA**, 1961, wire wheels, \$825. Van Nuys, 784-9807. A

**Home**, 3-bdrm., 2-bath, family rm., fireplace, cpts., G.E. bltins, d/washer, lge. patio, trees, L.A. schools, \$25,900. Dominguez, 635-0862. A

**Guitar Amplifier**, elec., 4 12" speakers in blond cabinet, \$100. Garden Grove, 714-894-1090. A

**Lot**, w/new boat slip, Bass Lake, timber, lge., fairly level, \$3,500. Box 802. A

**Alfa Romeo**, 1964 2600 Spyder, Pirelli tires, disc brakes, \$2,100. Lynwood, 635-3784. A

**Pontiac**, 1961, V-8, p/s, p/b, r/h, new tires, h/top, air cond., \$750. Hawthorne, 283-6750. A

**Ice Skates**, men's, black, size 10, \$25. Gardena, 675-6585. A

**Paintings**, framed, orig. watercolors & lithographs, orig. cost \$35 ea.; \$5 ea. L.A., 474-0814. A

**Outboard Motor**, 1966, Sea Gull, 5 h.p., long shaft, \$100. P.V. Ests., FR 7-4674. A

**Roaster Oven**, Westinghouse, w/matching cabinet & grill attach., \$18. Hawthorne, 675-8815. A

**Desk**, 24x48, modern, steel, 4 drws., matching swivel chair, cost over \$300; \$140. Los Alamitos, 596-0521. A

**Oldsmobile**, 1961, 4-dr. h/top, air cond., \$875. P.V. Ests., FR 5-5097. A

**Table Saw**, 8" Craftsman, 3/4 h.p. motor, stand, top ext., many extras, \$90. Long Bch., 425-1938. A

**Boat**, 12' Burchcraft, 7 1/2 h.p. motor, trailer, hitch, oars, \$225. La Mirada, WH 1-1865. A

**Home**, 3-bdrm., 2-bath, fireplace, bltin range & oven, cpts., dps., patio, encl. rear yd., 4 1/2 G.I. loan can be assumed, \$26,950. Gardena, 329-2393. A

**Ford**, 1957 2-dr. h/top, auto., r/h, \$150. Inglewood, 755-1071. A

**Golf Clubs**, bag, Bob Golby irons & woods, \$70. Hawthorne, OS 6-9914. A

**Dinette Set**, 4 chairs, \$15. San Pedro, TE 3-3826. A

**Table**, Duncan Phyfe, 2-tier, \$7.50. Inglewood, 757-2955. A

**Transom Mount**, for o/board motor, \$8. Long Bch., NE 2-3489. A

**Mattress**, & spring, \$65. Compton, 639-8419. A

**Houses**, 2-bdrm., \$210 income plus owner's, \$3,000 dn., \$225 mo., \$31,000. Lawndale, 378-0500. A

**Tonneau Cover**, for Corvette, \$20. La Habra, 697-4927. A

**Bridal Gown**, empire fitted sheath, bell sleeves, veil, train, cost \$129.95; \$50. Garden Grove, 539-3925. A

**Ford**, 1962 Fairlane 500, 2-dr. sed., V-8, auto. trans., \$725. San Pedro, TE 3-0742. A

**Home**, 3-bdrm., G.I. approved, h/wood flrs., fenced yd., dble. gar., bltin range & oven, 5 mins. from 405 & 605 Fwys., 4 yrs. old, \$20,500. Huntington Bch., 865-1411. A

**Pool Table**, 3 1/2' x 7', balls, 2 que sticks, bridge, & rack, \$50. Manhattan Bch., FR 2-6916. A

**Surfboard**, Dewey Weber, 9' 10", w/car rack, & med. sized surf jacket, \$100. Inglewood, PL 5-6830. A

**Piano**, Hallet & Davis, spinet, \$350. Torrance, DA 6-7232. A

**Lincoln**, 1963 Continental, full power, & air, \$2,250. Costa Mesa, 524-2676. A

**TV**, custom 27" Magnavox, special 10-watt hi-fi amplifier, tone & remote control, service guarantee, \$125. P.V. Pen., FR 7-4528. A

**Pickup**, 1953 Chevrolet, 1/2 ton, r/h, side mount spare tire, \$275. Rolling Hills, FR 7-1043. A

**Truck & Camper**, Dodge, \$1,500. Lomita, 534-1094. A

**Renault Dauphine**, 1960, recent eng. o/haul, \$175. Rolling Hills, TE 3-0346. A

**Chairs**, pr., decorator-type, antique white, cane back, gold & green uphol., orig. cost \$150 ea.; \$65 ea. Torrance, 326-0124. A

**Alfa Romeo**, 1961, new top, \$650. Hawthorne, 644-3026. A

**For Sale**

**Impala**, 1966 2-dr., r/h, p/s & p/b, new tires, \$100 & take over \$89 mo. pymts., \$2,100. Gardena, 679-3927. A

**T-Bird**, sunroof, 1960, black leather int., \$700. P.V., 831-9518. A

**El Camino**, 1966, 3-spd., 6-cyl., take over \$85 mo. pymts., \$1,650. Manhattan Bch., 545-1676. A

**Home**, 3-bdrm., 2-bath, bltin range & oven, cpts., dps., fenced back yd., lge. covered patio, sprinklers, other extras, \$17,500. Lancaster, WH 2-9836. A

**Volkswagen**, 1963, 9-pass. station wagon w/sunroof, converts to camper, incl. camping equipment, \$1,350. L.A., 645-7891. A

**Corvette**, 1962, 327 auto., \$1,900. Huntington Bch., 714-536-4784. A

**Lot**, level, 130' frontage, \$23,500. P.V. Ests., FR 5-0867. A

**Western Bar**, 80", custom-made w/overhead yoke & lights, never used, \$125. Manhattan Bch., FR 4-3989. A

**T-Bird**, 1959 convt., full power, r/h, new top, trans., valve assy., \$795. Torrance, FR 1-6515. A

**Dehumidifier**, automatically controlled, small compact on casters, \$40. P.V. Pen., 377-7670. A

**Bicycle**, Schwinn, boy's, 28", lock, \$20. Lynwood, 635-3227. A

**House**, 3-bdrm., 2 1/2 baths, family rm., all elec. kitchen, d/washer, fireplace, patio, landscaped, sprinklers, 35 mins. to Northrop, \$25,500. Fountain Valley, 714-847-6344. A

**Books**, Landmark Historical series for pre-teens & teens, 17 vols., \$10. L.A., 670-5627. A

**Morris Minor**, 1958 2-dr. sedan, \$225. Manhattan Bch., 372-7329. A

**Volkswagen**, 1961, bus w/windows, 1963 eng. & trans., interior completely done over, \$1,050. Hermosa, FR 9-4075. A

**Exec. House**, 3-bdrm., 2 miles to Norair, fenced, view, \$33,950. Inglewood, 673-1097. A

**IV**, 21" Admiral, color, early American console, 3 yrs. old, \$195. Lawndale, 3/0-3821. A

**T-Bird**, 1957, r/h, auto. trans., \$1,400. Redondo Bch., FR 8-5471. A

**Honda**, 1965 Scrambler, 250 cc, \$450. Inglewood, 677-7382. A

**Irailer & Lot**, 35', complete, Lake Isabella, \$4,300. Gardena, 635-3127. A

**Engagement & Wedding Ring Set**, 1 carat diamond, \$400. San Pedro, 831-4908. A

**TV**, RCA black & white, 23", solid maple cabinet, dual control, 1 yr. old, \$200. Hawthorne, 677-2549, 673-4369. A

**Hide-A-Bed**, Simmons, opens into able. bed, other miscellaneous items, \$40. So. Pasadena, 799-9476. A

**Pups**, Norwegian elkhound, male, champion sire, shots, \$100. Rolling Hills Ests., FR 8-4422. A

**Mercury**, 1960 Monterey, \$300. Lawndale, 370-3365. A

**Lot**, 75x150, level, fully improved, low dn., \$17,900. P.V., FR 7-4943. A

**Mustang**, 1966, r/h, w/w, auto. trans., \$2,000. Redondo Bch., FR 9-6938. A

**Tape Recorder**, stereo, all transistor, 30 watts output, cost \$299.95; \$115. Hawthorne, US 9-1550. A

**Bicycle**, girl's, 26", med. weight, Schwinn, \$12. Torrance, FA 8-3306. A

**Ford**, 1963 Country sed., p/s, r/h, 47,000 miles, \$1,050. Venice, EX 6-3594. A

**Volkswagen**, 1966, sunroof sedan, chrome whls., tool kit, many other extras, \$1,500. Hawthorne, 679-7662. A

**Tent Trailer**, Heilite, 1 yr. old, 3' folded, 5' wide, 7' long, 2 dble. beds, \$450. Torrance, 591-6873. A

**Chevrolet**, 1957 Bel Air, 4-dr., new auto. trans., \$300. Torrance, DA 7-2831. A

**Range**, gas, 4 burners, oven, rotisserie, 3 yrs. old, \$100. Gardena, DA 7-2339. A

**Ford**, 1961 Falcon 4-dr., new tires, good paint, recent engine o/haul, \$350. Rolling Hills, FR 7-3487. A

**Refrigerator**, Hotpoint, \$75. Inglewood, 675-6721. A

**TV**, 19", 1966 Zenith, port., \$70. Box 803. A

**Honda**, 1966, 305 Scrambler, 1,400 miles, \$600. Fullerton, 714-871-7287. A

**Youth Beds**, 2, \$10 ea. or both for \$15. Hawthorne, OS 9-0835. A

**Organ**, fruitwood, Wuriltzer, orig. cost, \$1,200; \$475. Northridge, 342-4536. A

**Lot**, Salton City, 73 x 140, improvements in, water, paved streets, near Sea, \$3,990. Inglewood, 673-1253. A

**Washing Machine**, auto. w/new pump, \$25. Placentia, 528-1494. A

**Outboard Motor**, 10 h.p. Johnson Seahorse, 5 gal. gas tank, \$75. Downey, 923-1521. A

**Corvette**, 1965 327 cu. in., 365 h.p., Americans, 8 1/2" Goodyears, 4.56, Hurst, headers, AM-FM, \$3,200. Hawthorne, OS 5-1365. A

**Dodge Dart**, 1960, \$200. L.A., 938-5718. A

**Honda**, 1966, 160 cc, some chromed parts, \$365. Inglewood, DA 9-0631. A

**Camper**, 1966 Tear Drop, 8 1/2' w/2 winch-type camper jacks, \$1,200. Yorba Linda, 714-528-0295. A

**TV**, RCA, color, 21", black metal w/legs, 4 yrs. old, \$250. Anaheim, 714-635-1686. A

**Volkswagen**, 1965 camper, fully equipped w/canopy, stove & heater, \$2,000. Box 804. A

**Accordion**, Lindo, 120-bass, black w/red velvet-lined case, 7 keyboard switches, 2 bass switches, orig. cost \$500; \$200. L.A., 670-6365. A

**For Sale**

**Truck**, 1960 1/2 ton Ford, long bed, 8 1/2' non-cabover Lovebird camper, bltins & intercom, \$1,000 or camper only, \$400. Torrance, 320-3440. A

**Engine**, for 1959 Buick, bored to 388 cu. in., balanced, forged pistons, never run, \$275. Torrance, DA 6-8273. A

**Lot**, Lake Havasu City, 1 block from hotel, \$5,000. Torrance, FR 6-5057. A

**Lot**, 1/2 acre bldg. site, gentle slope, horses O.K., city water, elec. & phones, \$8,500. Agoura, 805-498-3075. A

**Saddle**, Western stock, 14" seat, 14" swell fork, \$135. Redondo Bch., 378-0123. A

**Motor Prop**, for 60 to 78 h.p. Mercury outboard, 12 3/4 x 15", bronze, never used, \$15. Hawthorne, 676-7109. A

**Crib**, w/mattress, \$10. L.A., 757-4628. A

**TV**, 23", w/cabinet doors, Zenith, black & white, \$50. Torrance, 370-0479. A

**Sailboat**, 11 1/2' Penguin, Dacron sail & little dude trailer, \$325. L.A., 645-1274. A

**Chevelle**, 1964, low mileage, \$1,750. Hawthorne, 673-3227. A

**Range**, Hotpoint, elec., 4 top burners, dual ovens, \$35. Redondo Bch., FR 9-1031. A

**Sloop**, 13', Marconi rigged, 13' Dacron sails, trailer, wood planked, \$250. San Pedro, 833-4820. A

**Duplex**, Spanish, lge. rooms, walk-in closets, tile baths, bltins, sundeck, secluded garden, \$27,500. Torrance, FR 8-1488. A

**Coffee Table**, 20" x 39" mahogany, & end table set, leather tops, 18" x 27 1/2", \$50. P.V. Pen., 373-3472. A

**Opel**, 1960 station wagon, r/h, recent tune up, \$425. Hawthorne, 675-5192. A

**Airplane**, 1942 Aeronca L3, 1 yr. since motor rebilt., Ceonite covered, 300 hrs. on eng., \$1,975. Redondo Bch., 375-7982. A

**Sofa**, & chair, brown, 2 end tables, matching coffee table, blond, \$150. Lawndale, OS 9-1606. A

**Home**, 3-bdrm., w/w cpts., dps., fireplace, fenced, landscaped, 20 x 28 gar., 1 1/2 miles to Ventura Div., 10% dn., \$22,000. Newbury Pk., 805-498-3043. A

**Home**, 3-bdrm., 2 baths, family rm., cpts., dps., bltin d/washer, fireplace, 26' x 15' screened-in patio, \$22,250. Buena Pk., 828-7953. A

**Snooker Table**, Brunswick, 5' x 9' slate, needs pockets, felt & balls, \$200. Lomita, 326-7327. A

**House**, 2,400 sq. ft., tri-level, 4-bdrm., 3 baths, rumpus rm. w/wet bar, air cond., 4 yrs. old, near Nortronics P.V., \$45,000. San Pedro, 831-0480. A

**Pickup Truck**, 1961 Chevrolet, 1 1/2-ton, 6 1/2' bed fleetside, 6-cyl., 4-spd. trans., heater, small slide-in camper, \$850. Anaheim, 714-638-3297. A

**Watch**, Waltham 25-jwl., man's, cost, \$110; \$87. Box 805. A

**Stereo**, General Electric, port., 40-watt, 1 1/2 yrs. old, w/speakers, & 60 stereo albums, \$150. Hawthorne, 675-9681. A

**Air Conditioner**, Amana, operates on 117 volts, can be mounted in window, \$95. Torrance, 375-3756. A

**Corvette**, 1965 Stingray, 365 h.p., 4-spd. posit., AM/FM, \$3,100. Inglewood, 374-7607. A

**MG**, 1964 Midget, wire wheels, w/w, r/h, tonneau, \$700. Anaheim, 772-2439. A

**TV**, 19" Emerson, portable, UHF & VHF, bltin ant., \$69. Hawthorne, 644-4039. A

**Yamaha**, 1963 Trailmaster, 80 cc, \$190. Fullerton, 525-6398. A

**Desert Air Lamp**, \$35. Chatsworth, 882-0761. A

**Acreage**, 10 acres in Antelope Valley, level, near Hwy. 14 & planned fwy., roads on 2 sides, \$13,300. Torrance, FR 8-1026. A

**Car Top Carrier**, alum., orig. cost \$100; \$40. Torrance, DA 9-5564. A

**Outboard Motor**, 5 h.p. Sea King, \$60. Lomita, 326-3135. A

**House**, 3-bdrm., 2 bath, fireplace, bltins, cpts., dps., near Fullerton State College, \$24,500. Yorba Linda, 524-0857. A

**Corvair Monza**, 1961, r/h, air, new tires, \$500. Anaheim, 772-1225. A

**Boat**, 14' Glasspar all fiberglass, 30 h.p. Johnson, elec. start, lge. whl. trailer, new paint, \$450. Yorba Linda, 528-4735. A

**House**, & 10 units, furn., Spanish style, 75' x 200' lot, 5 1-bdrm., 5 2-bdrm., 2 1/2 bath, extras, \$20,400 total income for 1 yr., oil rights incl., 60-70% loan, 15-20% dn., owner carry 2nd T.D., \$148,000. Hollywood, HO 4-1084. A

**Amplifier**, 100 watt stereo, \$90. Torrance, 326-6195. A

**Amplifier**, Vox & Rickenbacker, 12-string guitar, 3 mos. old, \$550 for both. Lawndale, 576-7182. A

**Twin Beds**, box springs & mattresses, hard maple, \$75. L.A., 291-3778. A

**Speakers**, stereo, Acoustic Research AR-2X, walnut finish, orig. cost \$200; \$100. Calabasas, 889-8179. A

**Ring**, man's, yellow gold, 5 diamonds, \$215. Gardena, 323-0934. A

**Chevrolet**, 1965 Impala, 2-dr., air cond., 4 new tires, \$1,850. Hawthorne, 675-6032. A

**House**, 2 on lot, 1 & 2 bdrm., rents for \$80 mo., corner lot, 2 blocks from Norair, \$26,950. Hawthorne, 676-4709. A

**Mercury**, 1956 h/top, new valve job, \$130. Gardena, DA 9-4200. A

**Aquarium**, complete outfits, 5, 15 & 20 gals., stand, pumps, filters, hoods, \$75 or sell separately. Inglewood, 672-6647. A

**Coin Book**, 1909 to date, U.S. cent & many extras, \$100. Box 806. A

**For Sale**

**Chevrolet**, 1966 Caprice 327, full power, r/h, w/s/w, 7,500 mi., \$2,700. L.A., 676-9060. A

**Chevrolet**, 1963 Impala, V-8 4-dr., 30,000 miles, \$850. Redondo Bch., 378-1645. A

**Boat**, 14' Glasspar DeLuxe, Pwr. Glide steering & other extras, 70 h.p. Merc., w/American trailer & winch, \$700. Torrance, TE 4-3163. A

**Boat**, 1965 Glasspar Avalon, 16' w/1965, 50 h.p. Mercury, fully equipped, \$1,675. Torrance, 320-5367. A

**Ring**, ladies' diamond solitaire, 27 pts. in white-gold mounting, paid \$147; \$100. Lake-wood, HA 5-3584. A

**Volvo**, 1964 544 Sport Coupe, B-18 eng., shoulder belts, tach., \$1,200. Harbor City, 326-8033. A

**Home**, stucco duplex, 1,500 sq. ft. owner's unit, 3-bdrm., 2-bath, family rm., cpts., dps., plus 5-rm., 2-bdrm. rental, fenced yd., landscaped, dble. gar., \$33,500. L.A., PL 4-2784. A

**House**, 4-bdrm., family rm., 2 1/2 baths, 1 acre, horses O.K., near Northrop Ventura, \$35,000. Somis, 805-482-1186. A

**Shotgun**, 12 gage Winchester 1200, \$85. Huntington Bch., 842-5281. A

**Electronic Equipment**, in good working condition, oscilloscope, meters, ham radio, \$4,000. Torrance, 320-5837. A

**Suit**, boy's, black, 2-pc., worn 3 times, size 14, \$10. Hawthorne, 675-5225. A

**Camera**, Yashica EM, light meter, flash unit & film, \$35. Lawndale, 371-5123. A

**TV**, 21" Hoffman, mahogany cabinet w/doors, \$30. Gardena, OS 5-5258. A

**Oldsmobile**, 1964 Cutlass Holiday cpe., 26,000 miles, auto. trans., p/s, p/b, p/w, radio, \$1,650. Inglewood, 672-7167. A

**Mustang**, 1966 convt., 289 V-8, auto., p/s, deluxe radio, w/s/w tires, other extras, \$2,250. Manhattan Bch., 379-3487. A

**Wanted to Buy**

**Car Top**, 12' Crestliner MFG., Fisherman. Gardena, DA 3-4695. B

**Rear Bumper**, for MGA, any condition, also old MGA complete or incomplete to be used for parts. P.V. Pen., 377-6193. B

**Paintings**, or pictures, western art, all types, will consider buying or trade for rifle. Los Alamitos, 430-2619. B

**Bicycles**, man & woman's, preferably 3-spd. Torrance, 542-1496. B

**Cabinet** for outside mobile home, approx. size 5' x 6' x 3' deep. Hawthorne, 644-3084. B

**Tea Cart**, old-fashioned, wooden, finish need not be perfect, but must be in good condition. Redondo Bch., 370-9795. B

**Filing Cabinet**, 2-drawer. Torrance, 328-0287. B

**Aquarium**, 10 or 15 gal., with or w/o accessories. Gardena, DA 4-2160. B

**For Trade**

**Trade** my equity in income property for larger units or for mountain cabin in Big Bear area. Brea, 528-4553. C

**Cad-Allard**, K-3 roadster, convt. top, all orig. equip., trade for sailboat, 14' Lido, or big late mod. motorcycle. Culver City, EX 8-5019. C

**Hearing Aid** for handicapped high school student, prefer Zenith, must be reasonable, not too old, trade for bicycle, 10-spd. Hawthorne, OR 2-2370. C

**Free (To Be Given Away)**

**Dog**, male, part beagle, 3 yrs. old, has rabies shots. Gardena, DA 3-9447. D

**Door**, approx. 76 1/2 x 32, w/glass, 2 screen doors, 76 1/2 x 32 & 80 1/2 v 42 1/4. So. Gate, LO 6-4306. D

**Pup**, fox terrier type, 3 mos. old, short hair, black w/brown markings, female. Torrance, 378-3231. D

**Pups**, black, Gardena, 329-5085. D

**Rentals Offered**

**Apt.**, furn., single, utilities pd., view, \$85. Manhattan Bch., 545-3666. E

**House**, 3-bdrm., 1 1/4 bath, family, laundry & work rms., mod. kitchen, fenced yd., patio, dble. gar., \$250. Hermosa Bch., 372-1632. E

**Apt.**, 2-bdrm., 10 mins. from Nortronics P.V., cpts., dps., bltins, unfurn., \$105 mo. Lomita, FR 8-5754. E

**Apt.**, 2-bdrm., bltins, cpts., dps., disposal, laundry facilities, \$125 mo. Redondo Bch., 375-6715. E

**Apt.**, 2-bdrm., 1 1/2 bath, w/w cpts., dps., near recreation & stores, \$125. Inglewood, 644-2565, 672-1850. E

**Apt.**, 1-bdrm., unfurn., 5 mins. from Northrop, all bltins, closed gar., lge. sep. laundry room, \$150 mo. Inglewood, 677-3994. E

**Apt.**, 2-bdrm., unfurn., closed gar., stove & ref. avail., 10 mins. from Norair, infant or teenager OK, \$95 mo. Hawthorne, 675-1821. E

**Cabin**, Big Bear Lake, sleeps 7 to 9, \$18 w/end; \$50 wk. Bellflower, TO 7-0662. E

**Vacation Cabins**, Lake Gregory & Crestline, \$25 w/ends; \$60 wk. Venice, EX 1-2040. E

**Apt.**, deluxe, 2-bdrm., furn., lge. pool, closed gar., near El Camino, \$160. Torrance, DA 9-5985. E

**House**, 3-bdrm., 1 1/2 bath, hobby rm., fireplace, cpts., patio, lge. fenced yd., 12 mins. to Nortronics, avail. June 1, \$155 mo. Orange, 714-538-7648. E

**Apt.**, 1 & 2 bdrm., cpts., dps., bltins, closed gar., 5 min. to Nortronics P.V., 15 min. to Norair, \$85 & \$125. Torrance, 375-2091. E

**Cabin**, Green Valley Lake, \$30 w/end; \$55 wk. Torrance, 320-2002. E

## Rides and Riders

**Rides Wanted**

**7 a.m. — 3:42 p.m.**

**Fairview & Overhill Dr.**, Los Angeles. Oscar Romero, Norair, ext. 2669, 291-5894.

## Rentals Offered

**Apt.**, 3-bdrm., 2-bath, 3 blocks from King Harbor, cpts, dps., bltins, piped music, bltin vacuum, storage in gar., \$160. Redondo Bch., FR 6-9608. E

**Apt.**, 1-bdrm., cpts., dps., bltin stove & refrig., air conditioned, 20 min. to Norair, \$95. Mar Vista, 391-7781. E

**Apt.**, 1-bdrm., deluxe, pool, \$95 mo. Redondo Bch., 376-2117. E

**Vacation Cabins**, Idyllwild, 1 & 2 bdrms., fireplace, stream, patios, \$17 to \$35 w/end; \$45 to \$70 wk. L.A.; PL 4-5288. E

**Apt.**, unfurn., 1-bdrm., bltins, laundry facilities, gar., few mins. to Northrop, adults only, \$95. Box 807. E

**Apt.**, 1 & 2 bdrms., furn & unfurn., bltin kitchens, swim pool, adults only, close to Northrop, \$110 & up. Box 808. E

## Rentals Wanted

**House**, 2-bdrm. w/fenced yd., near Northrop Hawthorne, have one small child, no more than \$150 mo. Hawthorne, 679-1350. F

**Apt.**, 1-2-bdrm., furn., within walking distance Engineering Science Center, will pay \$100 mo., prefer partial utilities pd., 2 adults, 1 infant. Redondo Bch., 370-9755. F

## Personals

**For Santa Fe facility**, Dept. D5670, to all who participated in sending me the get-well card, thank you very much, & hope to see you soon. SATCH HEARD. L

**We wish** to express our sincere appreciation to the wonderful people at Northrop for the blood donated to our daughter & sister, Martha Ann, who was critically injured in an auto accident. Our sincere thanks for the cards, flowers & interest taken in her progress. ANN, MARTHA & MARY CASTILIANO. L

**The Inglewood High School** class of 1947 will hold its 20-year reunion May 20, 1967. For further information call Barbara Guy, Inglewood, 672-7545. L

**Need** \$4,500, will give 2nd trust deed recorded & secured by title policy against deluxe 4-unit apt. house on Chapman Ave. college dist. of Fullerton, will pay 9.6% interest at \$100 mo. till paid. Buena Pk., TA 8-2857. L

## For Sale or Trade

**Home**, in Tucson, custom-blt., 4-bdrm. on acre lot near Randolph Park, many extras, \$23,900 or trade for property in Los Angeles-Orange County area. Hawthorne, 213-644-1459. M

**Oldsmobile**, 1961 Super 88, fact. air, power, r/h, \$675 or trade for ski boat of equal value. Pico Rivera, 695-3606. M

**Chevrolet**, 1956 convert., 3-spd. Hurst floor stick, 283 V-8, \$150 or trade car & cash for small station wagon, small pickup or VW van. Lomita, 326-1558. M

**Lot**, at Salton Sea, 1 mile from marina, \$3,400 or trade for lot at Lake Isabella. Inglewood, 672-1716. M

**Capacitor Tester**, Eico, mod. 955 in-circuit bridge-type, fact. wired & tested, never used, \$30 or trade for .22 pistol. Box 809. M

**MGB**, 1965, r/h, new Pirelli tires, wire whls., tonneau, \$1,



## Promotions, Opportunities Available

Opportunity may be knocking for a number of Northrop Nortronics employees.

It could mean participating in new or different technical activities. Or possible promotion. Or relocation to another part of the United States.

Nortronics has long followed a policy of looking within its current personnel ranks for individuals qualified for promotion or others interested in new technical challenges when opportunities of this nature arise.

Such a time is at hand.

Nortronics has never been more diversified, in product lines as well as multiple sites of operation.

For instance, addition of Northrop's Systems Laboratories and Support Operations activities have greatly increased the number of locations in which Nortronics people work.

A majority of those off-site locations now have openings for qualified technical personnel in a wide range of activities.

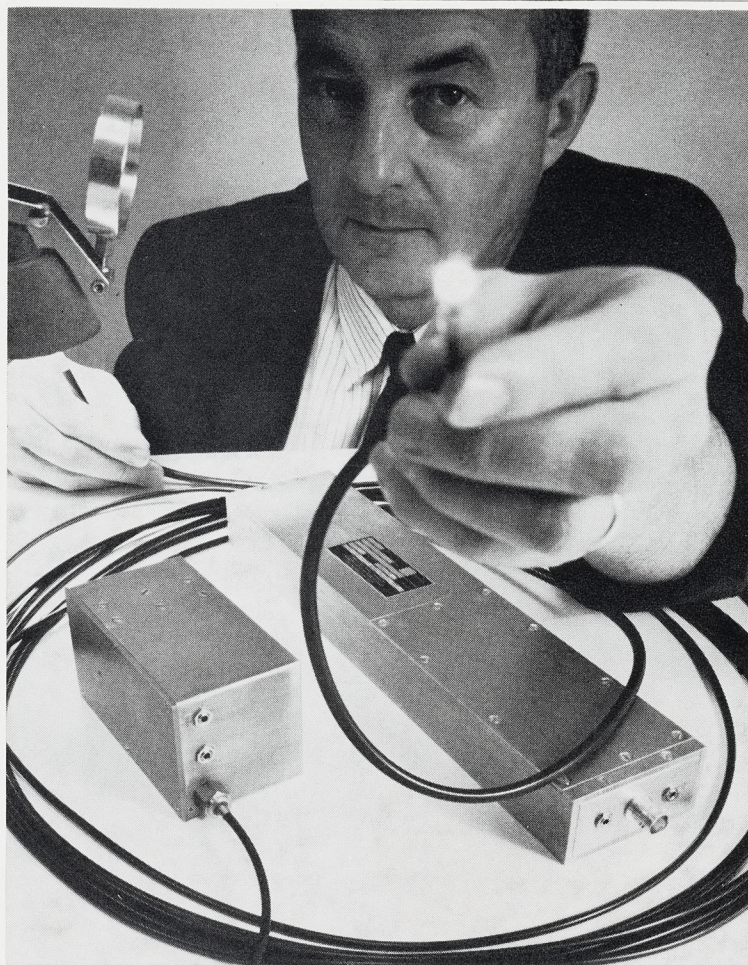
Included are posts with Brown and Root—Northrop providing support of NASA's Manned Spacecraft Center in Houston, Texas; in Engineering Support being provided the Jet Propulsion Laboratory at Pasadena, California, and the support facility in operation at Huntsville, Alabama.

All Nortronics West Coast Personnel offices have detailed files, complete with job descriptions, on these openings. Specific information may be obtained from Nils Johnson, ext. 2743 at NSL; Al Blythe, ext. 243 at Nortronics Hawthorne; or Jim Harris at ext. 306, Anaheim.

### Square Dance Planned

Northrop's Square Jets will hold their 18th Anniversary dance May 5 at Hill Rancho, 13701 Crenshaw, Gardena.

Ralph Hill will call this "biggest" of all NRC-sponsored square dance affairs of the year. Door prizes are planned and a continuous buffet will be served from 8 to 11 p.m.



**OPTICAL MEASUREMENT**—A fiber optic data link, developed by the Nortronics Applied Research Department (NARD) in Newbury Park, is capable of making measurements in severe electrical environments. The transmitter is at left. The longer case is the receiver, which includes a transducer and an amplifier.

### BATTERY-OPERATED

## NARD Develops Optical Aid

The Nortronics Applied Research Department (NARD) has developed a fiber optic data link for making measurements in severe electrical environments.

A battery-equipped transmitter includes an attenuator, which receives a signal from a source or specimen; a solid state amplifier; and an electrical-to-optical transducer, all contained in a shielded case.

A battery-operated receiver includes an optical-to-electrical transducer and an amplifier. Linking the transmitter and receiver is a one-sixteenth inch diameter fiber optic bundle with a length of up to 24 feet.

Other significant features of the data link include: bandwidth of up to 30 megacycles; solid state silicon circuitry plus a gallium arsenide infrared light source; and an unlimited duty cycle.

The absence of interconnecting wires or cables between the transmitter and receiver avoids distortion of electromagnetic fields, avoids the pickup of undesirable voltages due to radio frequency interference or electromagnetic fields, and avoids the creation of ground loop problems in instrumentation systems. The Applied Research Department is in Newbury Park.

### Siggson Named Bulletin Editor

Al Siggson, a Nortronics Hawthorne standards engineer, has been named editor of the Santa Ana Valley Engineer, a monthly publication for members of Chapter 119 of the American Society of Tool Manufacturing Engineers. He joined the group a year ago. He is a member of the Standards Engineer Society, the Toastmasters and the Civitan Club.

## Dr. Howard Discusses NSL Plans

The task facing Northrop Nortronics' new department, Northrop Systems Laboratories, will be to bring together various systems capabilities, combine them effectively with technologies, to both acquire major systems and develop new products for Nortronics.

So said Dr. V. W. Howard, division vice president and manager of the Northrop Systems Laboratories, at an address before members of the Nortronics Management Club last week.

Dr. Howard gave a detailed description of the department's organization and its programs and capabilities.

"We at Northrop Systems Laboratories will groom and breed products at Palos Verdes and, when this is accomplished, will farm them out throughout Nortronics," Dr. Howard said. "We will bring in products that the division can capitalize on, both on the East and West Coast."

Dr. Howard said that he and others associated with the former Northrop Space Laboratories organization are "pleased to be a part of Nortronics. Our products and objectives are aligned with those of Nortronics, and this merger should benefit both parties."

"The electro-optical activity was formerly handled by both Nortronics and Norair. Now it is combined and should make for a more efficient and effective organization in this fast-growing area."

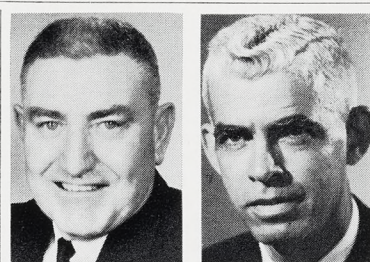
Dr. Howard briefly outlined current and future space systems activities, including the Mariner program, the OV2 satellite, and potential space payload development programs.

He also said the Deep Submergence Systems Project (DSSP) directly complements the concept of systems activity.

"Oceanography is a new field for Northrop," he said, "and we are developing a new technology which will benefit the entire corporation."

Dr. Howard described the information systems program. He discussed the systems and equipment activities currently active in this new growth area for Nortronics.

The life sciences organization and programs were reviewed, and the complementary support they are providing to the space systems, DSSP, and Norair were discussed.



Mr. McGinley

Mr. Foley



Mr. Wiebe

Mr. Richards

## Four Receive 25-Year Pins At Nortronics

Frank McGinley, Robert Foley, Marvin Wiebe and Ronald Richards observed Northrop 25-year anniversaries during April to head a large group of Nortronics personnel in West Coast operations passing service milestones during the month.

Twenty-year service awards were earned by Joseph Radigan and William Gaugh.

Eligible for 15-year Northrop service pins were Charles Morganti, Ira Coleman, Robert Criss, Buddy Sundquist, Arthur Raidy, Alfred Zurbrugg, Elsie Reusch, Katherine Ruddy, Keith Davis, William Conliffe, William Ohmer, Eleanor Porter.

Dorothy Robinson, Mildred Guolo, Jaime Lopez, Peter Matthews, Alonzo Moore, Francis Finnegan, Jack Swanson, Karl Allebach, John Overholser, James Brust, Maynard Hesse, Robert Danielson, Sanford Bailey and Floyd Grady.

### Softball, Slo-Pitch Players Needed

Softball season for NRC-sponsored clubs gets under way the second week in May, but there is still room on some teams for individual players.

In addition to regulation softball, NRC will sponsor slo-pitch leagues using both 12 and 16-inch balls. Information is available through Commissioners Maury Shulman, ext. 610 at Nortronics Hawthorne, or "Mac" McConnell, ext. 4841 at Norair.



**INSTALLATION TIME**—Hank Greenberger (left), past educational vice president of the Northrop Toastmasters, introduces Dr. V. W. Howard, guest speaker at the Toastmasters installation dinner. Dr. Howard is Nortronics vice president and Northrop Systems Laboratories general manager.

### BOWLING ROUNDUP

## Doubles Tournaments Held; Banquet Nears

The "biggest ever" (67 couples) Scotch Doubles bowling tournament ever staged by NRC at Nortronics Anaheim was held early this month in Fullerton.

With the final pinfall, Al Howard and Bea Gaumer emerged as over-all winners with a handicap total of 1,224 pins. This duo, plus Vito DePaul and Nancy Mulholland, Ray McKinley and Dot Miller, Al Howard and Carol York, won trophies.

Other winners, in order, were Doug Davis and Norma Schrupf, Mr. DePaul and Frankie Menzie, Lewis and Marjorie Lantz, Larry Hinaga and Billie Carlson, Fred and Geri Davis, Wes Parker and Dot Miller, Lyle and Rita Alexander, and Bob and Maxine Merrill.

Mr. DePaul and Nancy Mulholland topped the scratch field, while Garry and JoAnn Dearen earned "good sport" honors for their last-place finish.

\* \* \*

Nortronics entries copped top handicap honors and Norair entries took scratch honors April 15-16 when 118 couples took part in an NRC-sponsored scotch doubles keg tournament in the Hawthorne area.

Gwen Morillo and Dick Miller had a 658 handicapped series, Betty Holder and Vito DePaul, a 244 handicap game. All represented Nortronics.

Dee Heinrich and Bill Myerson's scratch 569 series and Marty Williams and Norm Bailey's scratch 217 game took laurels

in that bracket. Both teams are from Norair.

Second in handicap series went to Vicki Parka and Russ Stehle, while Ruby and Orville Hormann took third.

\* \* \*

Nortronics Anaheim's NRC will recognize individual and team winners from three winter bowling leagues May 6 at an Award Banquet set for NRC Clubhouse.

The 7:30 p.m. affair will feature round-of-beef dinners and the music of Gene Galante and his "Tune Launchers" for dancing.

Tickets (at \$4 per person) are now available at Personnel Activities, Anaheim.



# NORTHROP NEWS

NORTHROP NORTRONICS

Published biweekly by Northrop Corporation, Beverly Hills, California

Vol. 25, No. 9

May 10, 1967

## Three Named To Supervise 'Clean' Drive

Three stalwart Nortronics men ride forth this month to campaign in Operation Clean.

Taking on the Anaheim department is Doug Leavenworth, chief of Product Support. Bill Spafford, supervisor of Property Control, takes a new broom to the Johnson building, and Floyd Priest, NSL executive adviser, tackles Palos Verdes.

The three men were chosen from among hundreds of volunteers—all of whom were volunteering to be excused. But having gallantly accepted their responsibilities, each man is now organizing a brigade of men to join him in rallying 'round the trash can.

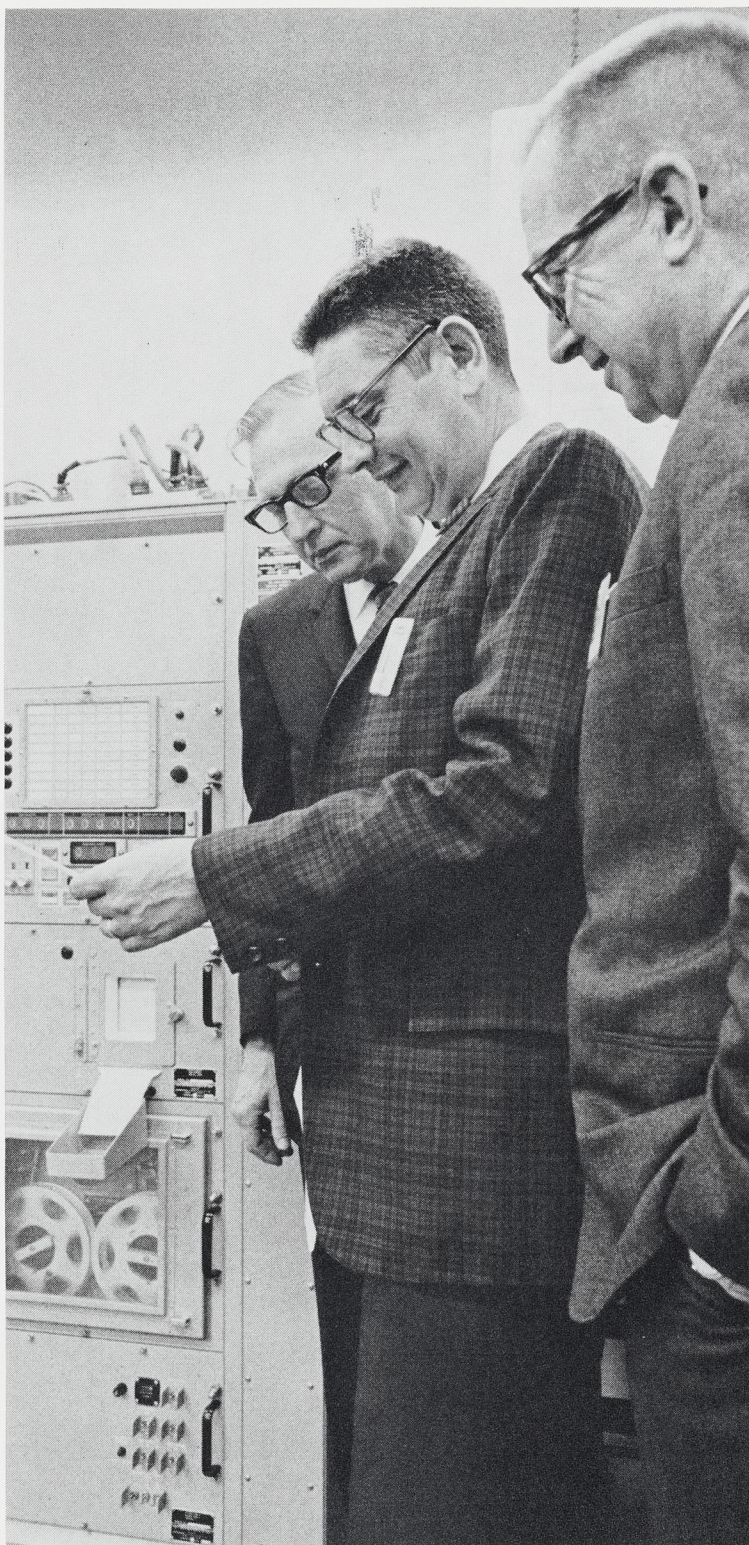
Supreme commander for Operation Clean is Roger DiJulio, assistant to the treasurer. His objective for May—unclutter office landscapes. Specific targets of opportunity — heavily laden cabinets, files and desk-tops and hidden supply caches.

"This campaign will last a month," said Mr. DiJulio, "so everyone can arrange his schedule to find time to do his bit for Operation Clean."

Mr. DiJulio noted that no one really plans to accumulate old or unnecessary materials. The normal press of daily work often pushes aside the time needed to weed out cabinets and files.

"But by reducing the money we have tied up in old or surplus materials," he said, "we hope to free a considerable amount of money that can be more profitably invested elsewhere in the company."

For most, however, the benefits of Operation Clean are likely to be more personal and tangible. It's like the feeling you get after finally cleaning out the garage—the place looks so much better.



*SUCCESS FOR 'TEAMS'—Commander William Wilson (center), head of the Navy's Ships Engineering Center Technical Support branch, accepts the second of 26 Nortronics-built TEAMS units. With him are V. A. (Jack) Parks (left), of the same Navy branch, and Frank W. Lynch, Nortronics vice president and Anaheim manager.*

## AHEAD OF SCHEDULE

### C-5A Navigation Equipment Delivered

The first components of Nortronics' Inertial Doppler Navigation Equipment for the U.S. Air Force C-5A transport were delivered to Lockheed - Georgia Company last month, well ahead of schedule.

The three completed units included the control panel, indicator panel and the Doppler indicator, which is built for Nortronics by GPL Division of General Precision, Inc.

For this delivery, Nortronics' Navigation department at Hawthorne was required to provide only lighted display panels for use in a mockup of the C-5A navigation station. But working under an accelerated completion schedule, the completely assembled units were ready to meet the earlier deadline.

When installed in the mockup

at Lockheed's Marietta, Georgia, plant, the Nortronics equipment will be part of the few fully functional units in the mockup. Air Force and Lockheed personnel will use the mockup to perform a lighting design review.

Two of the individuals responsible for this ahead-of-schedule delivery are Engineer Ernie Brandi and Burt Diamond, supervisor of Airborne Electronics Manufacturing Support. Mr. Brandi was on hand when Lockheed Engineering Representative Tom Miller inspected the units before they were shipped to Marietta.

According to Mr. Diamond, much of the credit for the job goes to the team of assemblers made up of Maurine Bleeker, Katherine Celestine, Agnes Jeffries, Lois Jellsett, Frances Luce-ro and Joyce Oaks.

"It was their personal pride in achievement," Mr. Diamond said, "that enabled us to meet our commitment with a very small amount of rework."

For future crews of the C-5A, the three panels will be the most visible elements of Nortronics' inertial-Doppler navigation system.

The control panel allows the navigator of the C-5A to give the system instructions needed to carry out a mission. The indicator panel in turn is the navigator's main source of information. It tells the exact position of the aircraft, indicates the status of the navigation system and provides other needed navigational information.

The Doppler indicator displays ground speed, drift angle and mode of operation.

## Second TEAMS Unit Successful in Testing

Northrop Nortronics' second TEAMS unit passed its formal acceptance tests with flying colors last month at Anaheim and was delivered on schedule.

This unit is the second of its type built by Nortronics for use aboard a new class of U.S. Navy anti-submarine destroyer escorts. The initial unit early this year finished an extensive seven-month Qualification and Reliability Test Program.

The Navy has ordered 26 TEAMS (for Tactical Evaluation and Monitoring System) units which will automatically test and report the status of key sonar and radar systems aboard destroyer escorts.

Among those on hand to view the new unit was Commander William Wilson, head of the Technical Support branch of the Navy Ships Engineering Center in Washington, D.C.

Commander Wilson's group is responsible for technical project management of TEAMS.

Because this was Commander Wilson's initial visit to Nortronics, he was given a complete briefing on the status of the TEAMS program, as well as the applications of the system to other Navy needs.

Taking part in briefings were Nortronics Vice President and Anaheim Manager Frank Lynch, TEAMS Program Manager William Van Ordstrand, Project Engineer Hal Withee, and Applications Engineer Ray Price.

In its debut as a completed unit, the new TEAMS system was put

through a complete formal factory acceptance test routine.

In this four-hour test TEAMS demonstrated it would perform precisely as programmed. The acceptance tester simulated signals identical to those that will be given off by radar and fire control units while the TEAMS unit made its assigned measurements as programmed.

Pending time for its delivery to be installed aboard a new escort destroyer, the second TEAMS unit is scheduled to be used for a series of compatibility tests with an STS-10 radar system identical to one of those to be used aboard the escort destroyers and monitored by TEAMS. This unit has been installed at Anaheim for this purpose.

Meanwhile, the initial TEAMS unit, the veteran of the Qualification and Reliability Test Program, is being readied for use in other test phases of the over-all program.

## Opal Mountain Destination for Mineral Clubs

Northrop Gem and Mineral Clubs from the Hawthorne and Anaheim areas will join forces May 20-21 for a field trip to Opal Mountain.

A dry camp will be established in an area north of Hinkley, which is east of Mojave. Nodules and honey opal are the principal items found in this area, according to Dave Johnson of Norair, field trip chairman.

## Design Study Contract Awarded for ALOTS

Northrop Nortronics has received a contract to study preliminary designs of an advanced airborne photo-tracking unit. The contract was issued by the Air Force Eastern Test Range, Patrick Air Force Base, Florida.

The unit will be an improved version of the Nortronics Airborne Lightweight Optical Tracking System (ALOTS), now in use by the Eastern Test Range. The advanced system calls for higher resolution, added data recording capabilities and greater range.

Mounted on a KC-135 jet aircraft, the existing ALOTS uses a video camera to automatically track missiles during launch, staging or re-entry phases. A 70-mm motion picture camera with a 200-inch focal length lens records the mission while the aircraft flies at altitudes up to 40,000 feet.

Major advantage of the system is that it allows smooth, automatic optical tracking, which results in better sequential rec-

ords of missions. Because it is an airborne system, it is capable of photographing a mission above cloud cover which otherwise would inhibit a launch.

During the year that the existing ALOTS has been in operation at the Eastern Test Range, it has successfully photographed an estimated 40 missions.

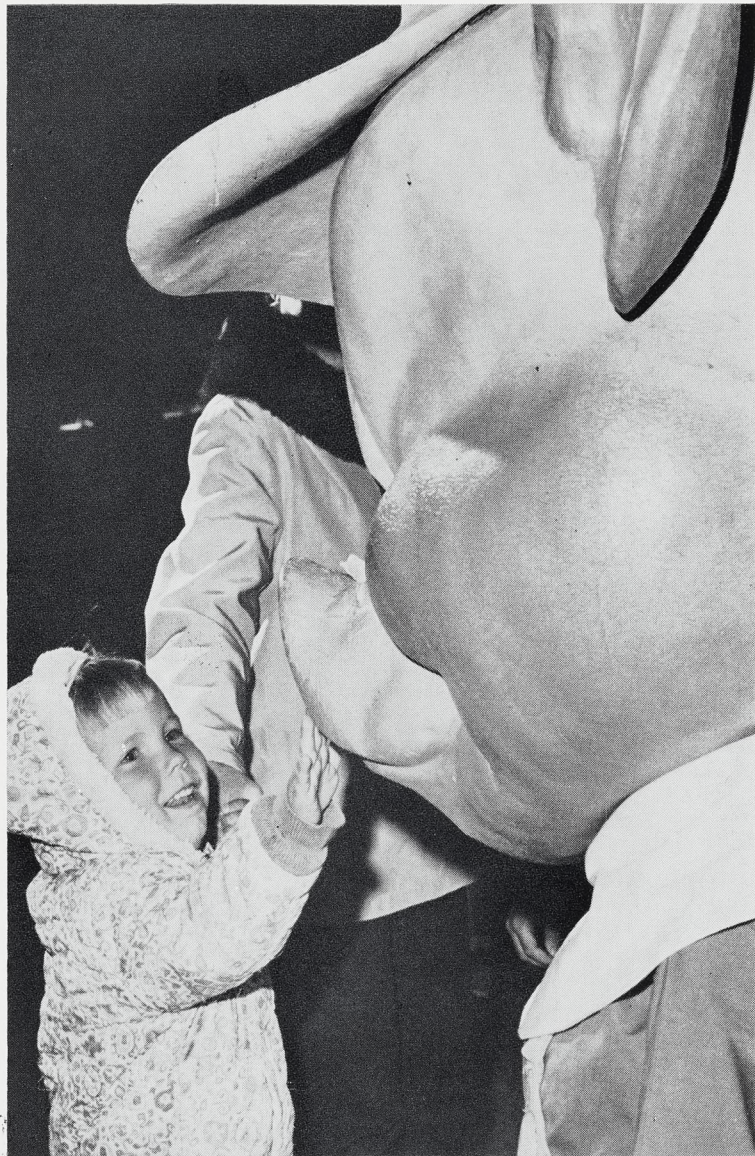
Nortronics is also supplying the 1369th Photo Squadron at Vandenberg Air Force Base, with ground-based Tracking Error Detectors similar in principle to the ALOTS video system. The six units being built for Vandenberg fit standard mobile photo mounts.

## Radio Club to Meet

Northrop Radio Club will elect officers tomorrow at a meeting set for 5 p.m. in NRC Clubhouse, Hawthorne.

A film, "Radio Waves," will be shown following the election and business meeting.





**NIGHT AT DISNEYLAND**—What could be a greater thrill than meeting one of the Three Little Pigs? Maybe it's meeting Mickey Mouse in person. For the older participants, April 29 meant taking time out to rest, or riding a boat

through one of Disneyland's newest fun areas. In all, nearly 14,000 employees and their families made this year's Northrop Night at Disneyland the biggest to date. Employees from all Northrop divisions attended the event.

## NRC to Sponsor May 27 Tour Of Universal

The world's largest motion picture and television production facility, Universal Studios, will be reserved exclusively for Northrop employees and their guests May 27.

This will be "Northrop Day," the big event sponsored jointly by NRC Councils. The hours are 9 a.m. to 4 p.m.

Through NRC sponsorship tickets are available at discount rates: \$2.25 for adults and juniors; \$1.25 for children five through 11 years. Tickets are now available through NRC outlets.

One price covers the entire activity, with the exception of food, drink and souvenirs.

For instance, it entitles the holder to ride the famed "Glamor-Tram" on tour of the huge production lot. It also covers the cost of other attractions.

## ASTRONAUTICAL SOCIETY

### Horner, Dr. Hicks in Dallas Meeting

Two Northrop officers were prominent participants in last week's thirteenth annual meeting of the American Astronautical Society in Dallas.

Richard E. Horner, senior vice president—Technical, was one of the featured participants in a panel conducted by Jules Bergman, ABC-TV science editor, on the topic, "Space Commerce: Opportunities for the Future."

Dr. Donald A. Hicks, vice president — Corporate Research, and manager of Northrop Corporate Laboratories, appeared on a panel chaired by the Honorable Edward S. Welsh, executive secretary of the National Aeronautics and Space Council. Dr. Hicks' topic was "Economic Need and Payoff."

Engineering specialist Al Freedman of Northrop Norair Metallics Research will be in Denver this month, speaking at a symposium sponsored by the

Air Force Materials Laboratories.

Mr. Freedman will present a paper, "Cyclic Hot Salt Stress Corrosion of Titanium Alloys," co-authored by himself and engineer Larry Stone. The symposium is the 50th anniversary in a series on military and aerospace equipment. It will be held in Denver on May 23 through 25.

Participating in other symposiums this month will be G. D. Halushynsky, of Page Communications Engineers, and Carl Brooks, a senior engineer and communications specialist at Norair.

Mr. Halushynsky will be in San Francisco on May 18, appearing before the AIAA/ISA/IEEE National Telemetering Conference. He'll discuss "Successful Advancement of Research and Development Personnel," during a conference session on management. Page is a wholly owned subsidiary of Northrop

Corporation.

Mr. Brooks is technical program chairman of the First Symposium on Vehicular Communications Systems, which will be held on May 25 at the International Hotel in Los Angeles.

In a recent meeting, another Northrop speaker was William C. Armstrong, chief of the Projects group at Nortronics Systems Laboratories. Mr. Armstrong discussed "Low Cost Scientific Satellite Development" at an April 18 meeting of the Institute of Electrical and Electronics Engineers Aerospace and Electronics Systems group. The dinner meeting was held in the Biltmore Hotel, Los Angeles.

F. W. Peitzman and D. W. Linder of Research Laboratories-Test have written "A Technique for Obtaining Two-Dimensional Airfoil Data in a Conventional Transonic Wind Tunnel." The paper has been presented

(See MEETINGS, page 3)

## Women Invited To Next Meeting Of Toastmasters

Northrop Toastmasters have extended a special invitation to ladies who may be interested in forming a Toastmistress Club to attend their next meeting.

It will be held at 6 p.m. tomorrow at the Sojourn Inn, 4330 W. Century Blvd. A \$3 charge will be made for dinner.

Pauline Myers, International Toastmistress Club field representative, will be the featured speaker.

Like their male counterparts, the Toastmistress group features self-development, leadership training, proficiency in communications and developing skills in organization.

The Toastmasters also sponsor public speaking classes for teenagers. A recent "speakeasy" course, taught in Hawthorne, received such excellent response that a similar program is being planned.



Classified

Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private businesses are not accepted. The Northrop News reserves the right to edit or omit ads. Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 62. Ads are limited to one item and one ad per person each issue. Deadline is noon Wednesday, one week before publication.

For Sale
Falcon, 1966 station wagon, 4-dr., w/w, radio, 6-cyl., auto. trans., still under warranty, \$1,800. P.V. Pen., 377-3290. A
Wedding Gown, size 8, \$10. Compton, 639-8419. A
Engine, 1958 Plymouth, complete w/clutch & pressure plate, \$50. Hawthorne, 676-7109. A
Stereo-Console, Magnavox, walnut, \$180. L.A., 938-5718. A
Lot, ocean view, level, 75x150, low dn., \$16,950. P.V. Pen., FR 7-4943. A
Cabin, lake front, 2 yrs. old, pvt. dock, winterized, Bass Lake, \$39,500. Box 901. A
Truck, 1963 Chevrolet, ¾-ton w/6 plys, shell camper & 17" Dalton house trailer, elec./butane lights & refrig., \$2,450. Inglewood, OS 6-4918. A
Stereo Component, Fisher 400T all-transistor, tuner-receiver w/walnut enclosure, orig. cost \$325; \$225. L.A., 474-0814. A
Home, 3-bdrm., 1¼ bath, cpts., dps., patio, pvt. back yard, within walking distance of Johnson bldg., 10% dn., \$23,500. Inglewood, PL 5-6830. A
Ford, 1962 Fairlane 500, 2-dr. sed., V-8, auto., r/h, \$695. San Pedro, TE 3-0742. A
Parrot, Panamanian, 4 yrs. old, talks & sings, w/stand, \$150. Torrance, TE 4-3163. A
Camper, 8', Princess, sleeps 3, 3-burner butane stove, 75-lb. ice box, \$475. Torrance, 320-5367. A
Furnace, Johnson, gas, No. 379, for melting lead alloys or alum., cost \$187; \$100. Long Bch., 378-7835. A
Lamps, 38" high, white porcelain, sculptured brass base, \$45 pr. P.V. Pen., 373-3472. A
Pontiac, 1959 Bonneville, \$250. Hawthorne, 676-7632. A
Sailboat, 8' Sabot, \$125. Redondo Bch., FR 5-5760. A
Dinette, chrome, 3 newly covered chairs, \$10. Inglewood, 672-8468. A
Vacation Trailer, 18', 1957 Jewel, \$550. Hawthorne, 675-4924. A
Vacuum Cleaner, Hoover, dial-a-matic, all attachments, \$45. Hawthorne, OS 5-5236. A
Yamaha, 1966, 250 cc Scrambler, \$575. Hawthorne, 679-1587. A
Chevrolet, 1956 2-dr., \$350. Hawthorne, 675-7746. A
Wardrobe Chest, baby's, natural wood, \$20. Redondo Bch., FR 3-3601. A
House, 3-bdrm., 2-bath, fireplace, bltin range & oven, cpts., dps., patio & encl. rear yd., 4½% G.I. loan can be assumed, \$26,950. Gardena, DA 9-2393. A
Camper, 10' over-cab & truck camper jacks, boot, self-contained, \$1,800. Torrance, DA 6-7232. A
Club Membership, Flyers, Inc., fly Bonanzas, Cessna 172's & Ercoupe, well equipped, \$450. Torrance, 373-1617. A
Pups, Weimaraner, AKC, shots, \$75 & up. Westminster, 714-531-3898. A
Plymouth, 1960 station wagon, \$535. Redondo Bch., 374-1124. A
Sterilizer, Evenflo, G.E. heating dish & baby swing, \$15 or sell separately. Torrance, 320-3440. A
Saxophone, Bleucher, tenor, case & resonator pads, \$195. Lakewood, HA 5-3584. A
Engine, Ford 292, rebored & completely rebuilt, never used, \$195. Inglewood, 755-1071. A
Cocktail Table, matching maple, 1 round, 1 oval, \$25, other misc. items. Redondo Bch., 378-0123. A
Camper, home-made, 8'x5'5", sleeps 3, ice box, \$50. Hawthorne, 644-1988. A
Home, ocean view, 2,273 sq. ft., 2-car gar., 5-bdrm., family rm., P.V. stone walls, planters, & fireplace, lge. patio, fruit trees, 3 mins. to Nortronics P.V., \$49,950 or lease w/option \$325 mo. P.V. Pen., 377-5319. A
Pontiac, 1965 Tempest Lemans, b/seats, V-8 auto. trans., p/s, AM-FM radio, w/w tires, \$1,995. Fullerton, 714-528-8926, 714-879-1447. A
Boat Propellers, inboard 1" bore left hand, reconditioned, \$15 ea. Anaheim, 714-776-1374. A
Chevrolet, 1954 sta. wag., 6-cyl. 1959 eng., \$60. Torrance, FR 6-1482. A
Camper, 8' cabover, \$950. Hawthorne, 675-3541. A
Volkswagen, 1962 sedan, r/h, recent o/haul, \$785. Hawthorne, 679-9658. A
Pontiac, 1962 Grand Prix, power, new tires, 46,000 miles, \$995. Downey, TO 9-2700. A
Sailboat, Del Rey 24 w/motor & 2 pages of equip. inventory, \$6,000. L.A., 398-5019. A
Chevelle, 1966 Malibu, 2-dr. sport coupe, low mileage, warranty, std. shift, \$2,025. San Pedro, 823-2969. A
Boat, 14' Birchcraft, 35 h.p. motor, \$375. Fullerton, 714-529-8379. A

For Sale
House, 4-bdrm., family rm., patio, cpts., dps., 3 yrs. old, low equity, \$37,500. Torrance, 375-0440. A
Doors, folding-type, 2, 38" x 79", white, mahogany & vinyl, incls. hardware, \$16. San Pedro, 833-6704. A
Volkswagen, 1965 sedan, 29,000 miles, \$1,300. Garden Grove, 897-6317. A
Flute, w/case, Reynolds, \$60. Inglewood, 672-3136. A
Stove, Gaffers & Sattler, 36", white, \$75. Torrance, 371-5916. A
Dinette Set, \$15. Hawthorne, 675-0891. A
House, 4-bdrm., family rm., 1¼ bath, bltin stove & oven, paneled & brick fireplace, cpts., f.a. heat, lge. patio, dble. attach. gar., landscaped, fenced, \$4,500 dn., \$32,500. Torrance, 379-9114. A
Accordion, Defazzio, 120 bass, 6 switches, 2 bass tones, \$200. Gardena, 329-9134. A
Tire, & Tube, 4.80-4.00-8, 4-ply, \$5. P.V. Pen., 377-3806. A
Refrigerator, Hotpoint, \$65. Inglewood, 675-6721. A
Buick, 1963 Special station wagon, V-8, p/s, r/h, w/w, \$1,275. El Segundo, 638-9396. A
Split Rims, 4 for 1964 ¾ ton Chevrolet pickup, \$15 ea. or \$50. Yorba Linda, 714-528-0295. A
Acreage, 5-acre ranch or cabin site, Willow Springs area, good road to property, \$17.50 dn., \$17.50 mo., \$1,750. Rolling Hills Ests., 325-3057. A
Phonograph, AM-FM radio, G.E. portable, model RP 2290, 1 yr. old, cost \$170; \$95. Torrance, 326-1382. A
Karmann Ghia, 1966, radio, under coating, \$2,000. Lakewood, 429-6843. A
Gym Set, \$10. Hawthorne, 675-3957. A
Cabin Cruiser, 16', Mark 75A Merc., elec. start., 12-v bat., lge. wheel trailer, \$795. Cypress, 714-527-7450. A
Tires, 2 Michelin X, radial ply, w/w, 185-15, over 30,000 miles tread left, \$70. Lakewood, 634-8632. A
House, 2-bdrm. & den, 1,580 sq. ft., cpts., dps., 1¼ baths, landscaped, no down, C.R.V. appraised, 6% interest, \$27,500. Lomita, 372-0129. A
Rambler, 1961 American station wagon, low mileage, good tires, \$360. Thousand Oaks, 805-495-0507. A
Amplifier, Fender Bassman, \$325. Hawthorne, OS 5-7410. A
Phonograph, G.E. solid state, stereo, cost \$100; \$40. L.A., 294-1043. A
Pickup Truck, Ford, 1966, F-100, long bed w/insulated cab-high shell, V-8 eng., auto. trans., custom cab, r/h, more extras, in warranty, \$1,995. Garden Grove, 714-638-5401. A
Chevrolet, 1956, 283, 3-spd., \$475. Torrance, 327-3947. A
Refrigerator, apt. size, G.E., \$15. Gardena, 329-0545. A
Piano, upright, needs work, \$50. Hawthorne, 679-7274. A
Guitar Amplifier, acoustic speaker encl. w/ 12" & 8" Jensen speakers, other extras, \$70. Rolling Hills Ests., 325-5875. A
Boat, 14' alum., 45 h.p. Chrysler w/elec. gas tk., fire ex., life vests, trailer w/winch, \$1,150. Manhattan Bch., OS 6-3365. A
Saxophone, Eb Alto, \$125. Norwalk, 868-1170. A
MGA, 1958, rebilt. eng., new clutch, brakes, batteries, radiator & paint, \$350. Lennox, 672-7417. A
Hillman, 1963 Super Minx, auto., radio, w/w, 13,000 orig. miles, \$650. Gardena, 327-2447. A
Engine, 1959 Buick, completely rebilt., never run, 364 cu. in. bored to 388 cu. in., \$275. Torrance, DA 6-8273. A
Travel Trailer, 1961 Shasta, 17', sleeps 6, fully self-contained, new trailer extras, \$975. Gardena, DA 4-2816. A
Home, 2,550 sq. ft., lath & plaster, 5-bdrm., 3-bath, cpts., dps., lge. living rm., formal dining rm., landscaped, corner lot, can assume 5¾% loan, \$38,450. Huntington Bch., 714-962-7954. A
Go-Kart, full competition, MC-90 eng., \$325. Newbury Pk., 805-889-0588. A
Mattress, twin size, firm, 900 coil, & box spring, \$37.50. Torrance, 371-8167. A
Honda, 1964 305 Scrambler, \$400. Gardena, DA 4-0649. A
Refrigerator, Frigidaire, separate freezer compartment, \$50. Redondo Bch., FR 5-4448. A
Boat, 14' Performer, fiberglass, 30 h.p. Evinrude, elec. start. eng., w/trailer, \$425; w/out trailer, \$375. Manhattan Bch., 429-6392. A
Boat, 15' 2", 35 h.p. Johnson, elec. starter, trailer, bait tank, \$350. West L.A., GR 3-7201 before 3 p.m. A
Ford, 1963, Galaxie 500, 2-dr. h/top, V-8, auto. trans., p/s, r/h, stereo tape, vibronic, \$1,000. Torrance, 328-1841. A
Chevrolet, 1956, auto. trans., 4-dr., \$175. Gardena, 532-6016. A
Ice Box, Marvel, elec., for trailer or camper, \$25. Hawthorne, 676-8841. A
Radio Station, complete, amateur, incls. Swan SW-240 transceiver, a.-c. power supply, other extras, \$350. Newport Bch., 675-0390. A
Travel Trailer, 16' 1961 Kenskill duplex, sleeps 8, Saf-Tow hitch, \$995. Fullerton, 714-526-2071. A
Couch, mattlasse, toast color, 7', \$100. Hawthorne, OS 9-6449. A

For Sale
Sailboat, fiberglass 14' Omega, sloop rig, tilt trailer, 3.6 h.p. Scott o/board, \$700. Long Beach, GE 4-9034. A
Surfboard, Jacobs, 9' 4", 3 blue stringers, \$50. Rolling Hills Ests., FR 8-5175. A
Wedding Dress, straight line, empire waist, long, size 7/8, \$30. Gardena, 324-6542. A
Telescope, 10" reflector on equatorial mounting, incl. wide-angle Erfyle ocular, 1" Ramsden & a Barlow, \$250. Santa Monica, EX 5-4801. A
Dodge, 1966 Coronet, 2-dr. h/top, air cond., vinyl roof, p/s, p/b, \$2,400. Sherman Oaks, 783-8271. A
Pool Heater, & diving board, Blue Haven, cost \$388; \$150. Inglewood, OR 2-3081. A
Home, cpts., 3-bdrm., 1¼ baths, 2-car gar., paneled den, plus all appliances, \$19,000. Wilmington, 835-0686. A
Camper Refrigerator, 3-way, 3 cu. ft., 12 volt, 110 volt, & butane, coil unit warranted 1 yr., \$135. Rolling Hills, FR 7-3487. A
Encyclopedias, 12 vols., 1897 edition, \$25. La Mirada, WH 1-6549. A
Volkswagen, 1962 Microbus, new paint, 3 seats, sun roof, \$1,095. Redondo Bch., 379-7197. A
Power Tools, Sears, little used, 6" jointer, other tools, \$60. San Pedro, 831-5304. A
Vertical Head, for vertical mill, No. 9 B&S taper, 6" Quill travel, fast & fine feed, no motor, \$200. Gardena, OS 5-5258. A
Camper, 8' w/boot, fits Ford or Chev., \$250. Hawthorne, 714-628-2671. A
Slip Lot, Salton Sea, house, lot & boat dock, incls. water, sewers, elec., \$7,100. Anaheim, 535-1694. A
Triumph, 1966 Bonneville, chrome, custom paint, \$988 or \$300 & take over \$53.96 pymts. Redondo Bch., 371-1004. A
Chevrolet, 1954 4-dr., 6-cyl., r/h, new uphol., \$200. Box 902. A
Porsche, 1967 911S, 4,500 miles, many extras, \$6,000. Artesia, 863-5447, 860-2760. A
Corner Lot, Shelter Cove, midway between Ft. Bragg & Eureka, approx. 82 x 108, stream at rear, all improvements in, \$6,000. Fullerton, 714-871-6703. A
Studio Couch, w/fitted cover, 2 mattresses, makes into dble. bed, \$25. Lawndale, 676-3050. A
Honda, 1966 Scrambler, 3,700 miles, \$450. Hawthorne, 679-0997. A
Speakers, & enclosures, stereo, walnut, Electro Voice-Marquis enclosures w/2 matching 12 TRXB Tri-Axial, VH driven speakers, \$160. Wilmington, 835-9070. A
Shaver, elec. Norelco floating head w/case, \$7. Inglewood, OR 1-6692. A
Boat, 14' Glasspar deluxe Lido, 35 h.p. Merc., full elec., Continental tilt-back trailer, \$595. Gardena, DA 9-4402. A
Motorcycle, Builaco 66, 250 cc, 1,700 mi. racing brakes, \$450. L.A., DU 4-1898. A
El Camino, 1964, 283 eng., 4 bbl. carb., r/h, air cond., 4-spd. \$2,295. Hawthorne, 532-5028. A
Hearing Aid, w/5 batteries, never used, cost \$150; \$60. Hawthorne, 675-1982. A
Flashgun, electronic Honeywell 65-C, \$40. Torrance, 542-1436. A
Truck, & camper, 1965 Chevrolet, Highway Cruiser Sport cab, w/equipment, 9,500 miles, \$1,750. Inglewood, OR 4-0870. A
Cabin Cruiser, 17' Bell Boy, 50 h.p. Mercury, hvy. duty trailer w/octopus arms, new tires, many extras, \$1,000. Hawthorne, 644-1600. A
Oldsmobile, 1958 4-dr., new tires, seats & trans., \$285. Hawthorne, OS 5-3557. A
Refrigerator, yellow, 2 doors, service contract incl., \$100. P.V. Ests., FR 5-5097. A
Corvan 95, 1963, w/bltin camper unit & attached encl. tent for side, makes into dble. bed, \$1,100. Redondo Bch., 379-1885. A
Volvo, 1964 544 Sport Coupe, shoulder belts, tach., \$1,200. Harbor City, 326-8033. A
Transmission, & linkage, for 1964 Munsey, 4 spd., \$175; w/bell housing, bal. clutch & pressure plate, \$275. Torrance, 320-6975. A
Dress Form, ladies', adjustable, \$7.50. Lomita, 326-3135. A
Rocker, 2 high back maple, \$18. Manhattan Bch., 376-4787. A
Bicycle, boy's 26" lightweight Schwinn, needs paint, \$8. Box 903. A
House, 3-bdrm., 2 baths, lge. lot, block wall & bltin sprinklers, cpts., dps., \$4,700 to existing 5¼% FHA loan, \$16,700 bal. Yorba Linda, 528-4735. A
Triumph, 1966 TR4A, r/h, tonneau cover, spoke whls., knock-offs, \$2,250. Rolling Hills, 375-6306. A
Stove, elec., \$25. Gardena, 323-6794. A
Rims, 2 deep-dish, chrome, for Volkswagen, never used, \$40. Inglewood, PL 6-7681. A
Trailer, 18' Roll-Along, twin beds, butane refrig., toilet, new 6 ply tires, 20-gal. water tank, alum. construction, many extras, \$525. Santa Monica, EX 4-8641. A
Volkswagen, 1963 113 sedan, 29,000 miles, w/s/w, radio, \$975. Hawthorne, 676-1673. A
Accordion, Universal, 120-bass, black & white w/red velvet-lined case, 5 keyboard switches, 2-bass switches, orig. cost \$328; \$125. Hawthorne, 676-5617. A
Pups, part German shepherd, 6 wks. old, \$10 ea. Redondo Bch., FR 2-8502. A
Chairs, 3 black Danish modern w/white Naugahyde, \$10 ea. San Pedro, TE 1-1745. A
Wig, blonde, worn 4 times, 100% human hair, \$95. Manhattan Bch., 545-2431. A
Sloop, 13' Marconi rigged, Dacron sails, wood planked, incl. trailer, \$250. San Pedro, 833-4820. A

For Sale
Corvair Monza, 1962 cpe., 4-spd., r/h, \$500. Costa Mesa, 646-1543. A
Ford, 1952 2-dr. sedan, r/h, good motor & tires, \$125. Gardena, DA 3-0979. A
House, 3-bdrm. & den, fenced yd., sandstone patio, 2-car detached gar., breakfast bar, panel living rm., 10 mins. to Plant l, \$1,500 dn., \$21,450. Gardena, 329-2904. A
Beach Lot, 40x100, Oxnard, close to ocean, fully improved, terms, \$8,000. Manhattan Bch., FR 4-3359. A
Washing Machine, Frigidaire, auto., 2 yrs. old, \$125. Redondo Bch., FR 5-2920. A
Tires, 7" slicks, rims, & tubes for Chevy. 14", cost \$70; \$35. Bellflower, 866-2160. A
Bookcase-Headboard, maple, king size, use w/twin size, \$50. Hawthorne, OS 5-1064. A
Oldsmobile, 1962, 88, 9-pass. wagon, p/s, p/b, air cond., \$1,100. Inglewood, 672-3155. A
Guitar, Fender precision, bass, custom white finish, w/case, \$180. P.V. Pen., 375-5761. A
Lot, Salton City, ½ mile from Sea, \$3,450. Inglewood, 673-1253. A
Pickup, 1958 GMC ½-ton, V-8 eng., 3-spd. trans., r/h, Borg camper, 1-owner, 43,500 actual miles, \$675. Hawthorne, 675-2950. A
Wanted to Buy
Drafting Table, desk, w/adjustable tilt top, max. size 4' x 6', & drafting machine. Los Alamitos, GE 1-0250. B
Encyclopedia Set, Britannica, recent edition. Hawthorne, 675-7965. B
Transportation Car, black, any make. Box 904. A
For Trade
Lot, 121' frontage, \$21,500 or trade for R-3 lot in Inglewood, Hawthorne, or Torrance areas. P.V. Ests., FR 5-0867. C
Ford, 1956 sta. wagon, 41,000 actual miles, trade for use of truck & camper during August. San Pedro, 833-6045. C
Free (To Be Given Away)
Dog, doberman mix, 3½ yrs. old, w/dog house. Cypress, 714-827-9356. D
Kittens, 4. Redondo Bch., 370-0342. D
Television, & chassis, 6, good for parts, picture tubes in good condition. Gardena, 329-9484. D
Rentals Offered
Vacation Cabins, Lake Gregory & Crestline, make reservations early for June through Sept., \$25 w/ends; \$60 wk. Venice, EX 1-2040. E
Bachelor Apt., furn., & utilities, 5 mins. to Norair, \$67.50. Los Alamitos, 754-2618. E
Court Apt., 2-bdrm., cpts., dps., fireplace, gar., pool, ½ mile from Northrop, \$125 mo. Hawthorne, 675-9667. E
House, 2-bdrm. & den, corrals, located off Malibu Canyon Rd., \$175 mo. Inglewood, 671-8401. E
House, 3-bdrm., 2 baths, bltins, 3 yrs. old, lease or lease option, \$185 mo. Thousand Oaks, 805-495-5371. E
Home, 4-bdrm., family rm., 2 full baths, bltins, lease, \$350 mo. L.A., OR 0-5990. E
Bachelor Apts., \$115 & \$110. Torrance, 532-7632. E
Apt., 1-bdrm., unfurn., cpts., dps., bltin oven, patio, laundry facilities, \$95 mo. Hawthorne, OS 5-5898. E
Cabin, Green Valley Lake, \$30 w/end; \$55 wk. Torrance, 320-2002. E
Apt., 1-bdrm., bltins, pool, \$95 mo. Redondo Bch., 376-2117. E
Cabin, A-frame, furn., sleeps 5, 40 miles from Colorado Springs, near 2 lakes & river, \$70 wk. Granada Hills, 894-1937. E
Apt., 2-bdrm., furn., lge. pool & patio, closed gar., near El Camino, adults, \$160. Torrance, DA 9-5986. E
Home, 3-bdrm., 2 baths, modern, completely furn., Lake Arrowhead, \$100 wk. Gardena, 532-6109. E
Vacation Camp Trailer, walk-in-type, 15' weekly, \$35. Placentia, 714-528-3533. E
Cabin, Big Bear Lake, sleeps 7 to 9, \$18 w/end; \$50 wk. Bellflower, TO 7-0662. E
Apt, 3-bdrm., 2 baths, carport, cpts., dps., patio, laundry facilities, no pets, children ok, \$175. Hawthorne, 673-3427. E
Apt., 1 & 2 bdrm., cpts., dps., bltins, closed gar., 5 mins. to Nortronics P.V., unfurn., \$85 & \$125; furn., \$105 & \$145. Torrance, 375-2091, 375-9397. E
Apt., 1-bdrm., furn., modern, newly painted, walking distance to Northrop, \$95. Hawthorne, OS 6-4734. E
Exec. Apt., 2-bdrm., 2 baths, 1,400 sq. ft., lux. features, lease \$180 mo. Inglewood, 670-6084. E
Beach Home, split-level, 3-bdrm., 2 baths, modern furn., lease from Aug. 17 to Jan. 17, \$300 mo. San Pedro, 833-2105. E
Summer Vacation Home, 4-bdrm., swim. pool, furn., avail. June 18 till Labor Day, \$400 mo., less for longer stay. P.V., 377-3400. E
Child Care Offered
Take care of school children during summer vacation, my home, state license, hot lunches & snacks, lge. backyard, near El Camino College. Redondo Bch., DA 4-6155. G
Personals
Leaving June 20 or 21 for one week trip to Moab, Utah by way of Flagstaff, Monument Valley or Gallup, New Mexico. Want lady rider or couple for one-way or both. Costa Mesa, 714-642-2616, 671-1254. L

Rides and Riders
Rides Wanted
7 a.m.—3:42 p.m.
La Brea & 63rd, Los Angeles. Oscar Romero, 291-5894.
7:20 a.m.—4:05 p.m.
Anaheim & Harbor Fwy., Wilmington. Tom Henrich, Mariposa, ext. 4040, 835-9070.
7:30 a.m.—4:15 p.m.
Marine & Highland, Manhattan Beach. L. Berg, Norair, ext. 2763, 545-1662.
Main Street & Pacific Coast Hwy., Seal Beach. S. R. Lindstrom, Norair, ext. 2845, 714-431-0807.
8 a.m.—4:42 p.m.
Palos Verdes Blvd. & Anita, Palos Verdes Estates, Ava R. Secrist, Norair, ext. 2078, 378-4924.
8 a.m.—4:45 p.m.
Pacific Coast Hwy. & P.V. Dr., Redondo Beach. Mary Graupmann, Nortronics Haw., exts. 638, 639.
Gilbert & Katella, Garden Grove. Marilyn Strauss, Nor. Anaheim, ext. 1047.
Rides Offered
7:30 a.m.—4:15 p.m.
Main Street & Pacific Coast Hwy., Seal Beach. S. R. Lindstrom, Norair, ext. 2845, 714-431-0807.
Personals
I wish to thank all of Butch Little's friends at Northrop for the money & the many expressions of sympathy extended to me in the loss of my dear husband. EMMA LITTLE. L
To our Northrop friends—your smiles, flowers, visits, words of comfort, the contributions to us & to Don's favorite charity—Jr. Blind, are still being deeply appreciated. May I, at this time, express my thanks & gratitude to Rev. John Chambers for conveying the message of love & comfort from God to us & our many friends & relatives. SARA G. HOLT & FAMILY. L
For Sale or Trade
Volkswagen, 1959 9-pass. bus, 1964 40 h.p. eng., \$500 or trade for American car of like value. L.A., PL 4-0078. M
Rifle, 30 06 Infield, \$35 or trade for 12 ga. dble. shotgun. Los Alamitos, 430-2619. M
Cabin Cruiser, 23' w/flying bridge, 327 h.p. Chevrolet inboard eng., fully equipped, \$3,500 or trade for smaller boat. Torrance, 835-0819. M
Motorcycle, Ariel, 1956, 500 cc single, special dirt bike w/out lights or gen., rebilt. eng., magneto, new tires, \$300 or trade for Triumph motorcycle or car. Garden Grove, 714-539-9964. M
Ring, ladies' black-star sapphire, size 6½, set in white gold w/diamonds, paid \$500; 6 mos. old, \$250 or trade for transportation car, Chevrolet preferred, in good condition, late 1950 model. Torrance, 320-6685. M
Acreage, 5 acres north of Rosamond, 1½ miles west of fwy. on dirt road, \$3,450 or take \$800 cash or car for equity, bal. payable \$26.50 mo. incl. 6% interest. Torrance, FR 8-1026. M
MEETINGS
(Continued from page 2)
for publication by the Supersonic Tunnel Association.
G. R. Hall of Internal Aerodynamics and Propulsion Research has written "Scaling of VTOL Aerodynamic Suckdown Forces," which was forwarded to the AIAA Journal of Aircraft, as a technical note.
K. J. Oswalt's paper, "Aluminum Alloy Castings With 60 KSI Minimum Tensile Strength," was written for presentation to participants in the Pacific Northwest Metals and Minerals Conference.
And, H. C. Kao's paper, "Boundary Layer Suction in a Power-Law Non-Newtonian Fluid," was sent to the Journal of Applied Mechanics, published by the American Society of Mechanical Engineers.
* * *
Two Northrop employees have been especially active lately in technical associations. Dr. Y. Goren of Advanced Aircraft Systems has been elected a director of the Management Division of the American Society of Mechanical Engineers.
And H. F. Marx of Marketing has been nominated as vice chairman in charge of meetings for the Los Angeles Section of the AIAA. The election will be held late this month or early in June. Mr. Marx is treasurer of the section.



## Northrop Gets Contract For 'A-X' Design Study

Northrop Corporation has been selected by the U.S. Air Force as one of four contractors to prepare preliminary design and other studies of a new type of airplane described as the A-X specialized close support aircraft.

The four companies were selected from 12 major aircraft builders that competed for the contract awards. The study contracts approximate \$232,500 each and will be conducted over a four-month period.

Northrop's Norair Division will prepare the Northrop study with technical participation by the Nortronics Division and by the

company's Chicago-based subsidiary, The Hallicrafters Company.

In addition to Northrop, companies receiving the contracts were General Dynamics, Convair Division, San Diego; Grumman Aircraft, Long Island, New York; and McDonnell Douglas Corporation, St. Louis. The contracts were awarded by the Air Force Systems Command's Aeronautical Systems Division at Wright-Patterson Air Force Base, Ohio.

In announcing the contract awards, the Department of Defense stated:

"Contractors are expected to explore various design concepts for the A-X, which would be relatively inexpensive, rugged and highly-survivable.

"The A-X is expected to be cheaper and simpler than the A-7, but with capabilities equal to or better than the A-1. Its performance would overlap that of the OV-10 at the lower end of its capabilities, and the A-7 at the upper end. It should be able to operate from medium-length prepared runways at maximum gross weight, or from short airstrips with a reduced payload. It would require a moderately high cruise speed for quick reaction time and a low speed necessary for attack and re-attack agility.

"The study contracts are part of the concept formulation phase of development, in which the military need and concept of operation, feasibility, cost and best characteristics of a new aircraft are defined and analyzed."

## 'AJAC' President Wins Area-Wide JA Honors

The young president of a Nortronics Anaheim-counselled Junior Achievement (JA) firm has been named JA "President of the Year" for Southern California.

He is John Brown, president of AJAC.

Last year Mr. Brown served as president of TRIVCO, the Nortronics-counselled firm that won "Company of the Year" honors in Southern California.

Honors will be bestowed on Mr. Brown and other top JA officials May 25 at a Future Unlimited banquet at the Hollywood Paladium.

Mr. Brown also won a JA "Executive Scholarship" for his services to JA over the years.

## ONE-YEAR ORBIT

### Monkeys in Space? Could Be

A spacecraft design study to keep two monkeys alive and unattended in earth orbit for as long as one year to investigate the effects of extended weightlessness is being conducted by Northrop Nortronics under a contract awarded recently by NASA Langley Research Center.

Nortronics engineers and scientists assigned to the Northrop Systems Laboratories are conducting the study. It is intended to lead to a better understanding of the physiological changes which have been predicted for manned planetary flights.

Two Rhesus (*Macaca mulatta*) monkeys would be carried into an earth orbit during the Saturn-

Apollo program for research purposes. The concept calls for a spacecraft containing the two trained monkeys to be inserted into an orbit during an Apollo flight and independently maintained for six months to one year.

NASA's Langley Research Center, Hampton, Virginia, awarded the eight-month design study contract to Northrop Systems Laboratories as one of two study contractors.

M. O. Hesse, program manager for Nortronics, said it is proposed that the recovery capsule containing the monkeys would be retrieved by Apollo astronauts after the flight experiments are completed. The monkeys would undergo further physiological examination and study after their return to earth.

The primate spacecraft program is under the Space Systems section of the Laboratories, and is receiving active participation from personnel in the Life Sciences section.

Other key personnel on the program include:

Bill McIntosh, deputy program manager; Lee Bernbach, Program Control; Art DeBolt, Mission and Experiments; Frank Lucca, Engineering; Maurice Shapiro, Test and Operations; Ken Hausman, Quality Control and Reliability; Clyde Kushnick, Manufacturing Facilities and Procurement; and William Coop, chief of the Programs Development group.



*HALLICRAFTERS DISPLAY — Jean Hunt, of Nortronics Hawthorne Personnel Services, and Stan Collins, Machine Shop general foreman, examine the many Hallicrafters products on display at Nortronics. The radios are being sold at a substantial discount to Northrop employees.*

## AT EDWARDS

### Navigation System Tested

Northrop Nortronics is flight testing a prototype insertion navigator at Edwards Air Force Base to obtain data on the lightweight inertial navigation system for high performance tactical aircraft.

The navigator contains the Nortronics-developed Floated Lightweight Inertial Platform (FLIP), a Nortronics digital airborne computer, and power supply. The insertion navigator weighs less than 70 pounds.

Nortronics said the FLIP in the

developmental system contains conventional ball-bearing gyroscopes, rather than the gas-bearing gyros now being produced for current Nortronics inertial navigation systems, such as the Lockheed C-5A system.

A Northrop F-5 is being used for the test flights.

Nortronics said the insertion navigator now being tested is a developmental system and will serve to obtain data for future lightweight inertial navigation systems.

## AT NORTRONICS ANAHEIM

### DCASD Realignment Program Completed

Since early this year a series of carefully-planned steps has been taken realigning responsibilities of administering government contracts at Nortronics Anaheim.

The program is now complete, according to Commander Harry M. Thompson, USN.



Comdr. Thompson

Commander Thompson is chief of the Defense Contract Administration Services District (DCASD) at Anaheim and responsible to Brigadier General Arthur E. Exon, Los Angeles regional director.

Until recent changes were made defense contract administration at Nortronics Anaheim fell to a DCAS office at the facility which was, in turn, a part of the district office headed by Commander Thompson.

"Changes have enabled us to shorten both coordination and communication lines," Commander Thompson said. "And they make it possible for us to provide better support through a larger staff of specialists. We have also been able to realize savings of defense dollars."

Many former members of the

DCASO staff at Nortronics continue to perform the same functions they have filled for years. Included are all Quality Assurance personnel and a majority of those assigned to Production activities. Some DCASO staffers have been absorbed into the DCASD organization, while others have transferred to other defense agencies.

Commander Thompson's organization includes 410 members with a variety of skills almost as extensive as the contracts they serve.

Currently, this single district office is administering contracts for all branches of the military and NASA of approximately \$600 million in dollar value represented in about 4,000 contracts held by some 1,500 contractors.

Nortronics Anaheim is included among these.

Contracts cover everything from complete systems to individual components.

The Anaheim DCASD is one of four major organizations of its type covering large parts of Los Angeles, Orange, Riverside and Ventura Counties.

(Editor's note: As Northrop's most diversified division, Nortronics is responsible to two DCASD organizations. Those contracts at

## Eye Injury Prevented By Glasses

E. L. (Tex) Robinson, Model Shop supervisor at Nortronics Anaheim, was recently presented a lifetime membership in the Wise Owl Club of America.

Membership is limited to employees of participating firms who have prevented damage or loss to an eye through the wearing of safety glasses.

Mr. Robinson was struck on the face and arm when hot plastic material exploded from an injection mold in a heating element. Although he received second and third-degree burns on the arm and first-degree burns on the face, his right eye was protected by safety glasses which stopped a strip of hot plastic.



Mr. Robinson

Wise Owl Club membership is bestowed by the National Association for the Prevention of Blindness.

Mr. Robinson's membership was accompanied by an award certificate, a lapel pin and special shop badge. He received these from Ray Schultz, director of Manufacturing-Materiel at Anaheim.

## Golf Club Plans Weekend at Palm Springs

A weekend of golf at beautiful Palm Springs (Indian Wells and Bermuda Dunes) is being planned by Northrop Golf Club for June 10-11.

Costs range from \$28.40 (single golfer) to \$39.80 (golfer and non-playing guest). Reservations will be accepted through Personnel Activities until May 19.

## Fine Arts Group Schedules Friday 'Harlequinade'

A Harlequinade Revue at 8 p.m. May 12 in Rice Auditorium, Leuzinger High School, will cap a round of activities highlighting Fine Arts Week in Centinela Valley.

The event is co-sponsored by Leuzinger's Fine Arts department and the Fine Arts Association of Centinela Valley.

Among featured performers scheduled to take part are Bill Thomas, Roger Ewing, Tanya Morgan, Dennis Cole, Angela Cartwright, Heather Menzies, Mark Miller, Chris Robinson and Brenda Scott.

Tickets sell for \$1.50 each.

## Needham Awarded Army Contracts

Contracts totaling approximately \$3 million for initial production of small machined parts and assemblies have been awarded to the Needham department of Northrop Nortronics by the U.S. Army.

Work will begin immediately and is scheduled to run 15 months.

The Northrop facility at Needham Heights, Massachusetts, also is engaged in production of Hawk missile loader and launcher cable assemblies and Polaris submarine periscope drive systems.



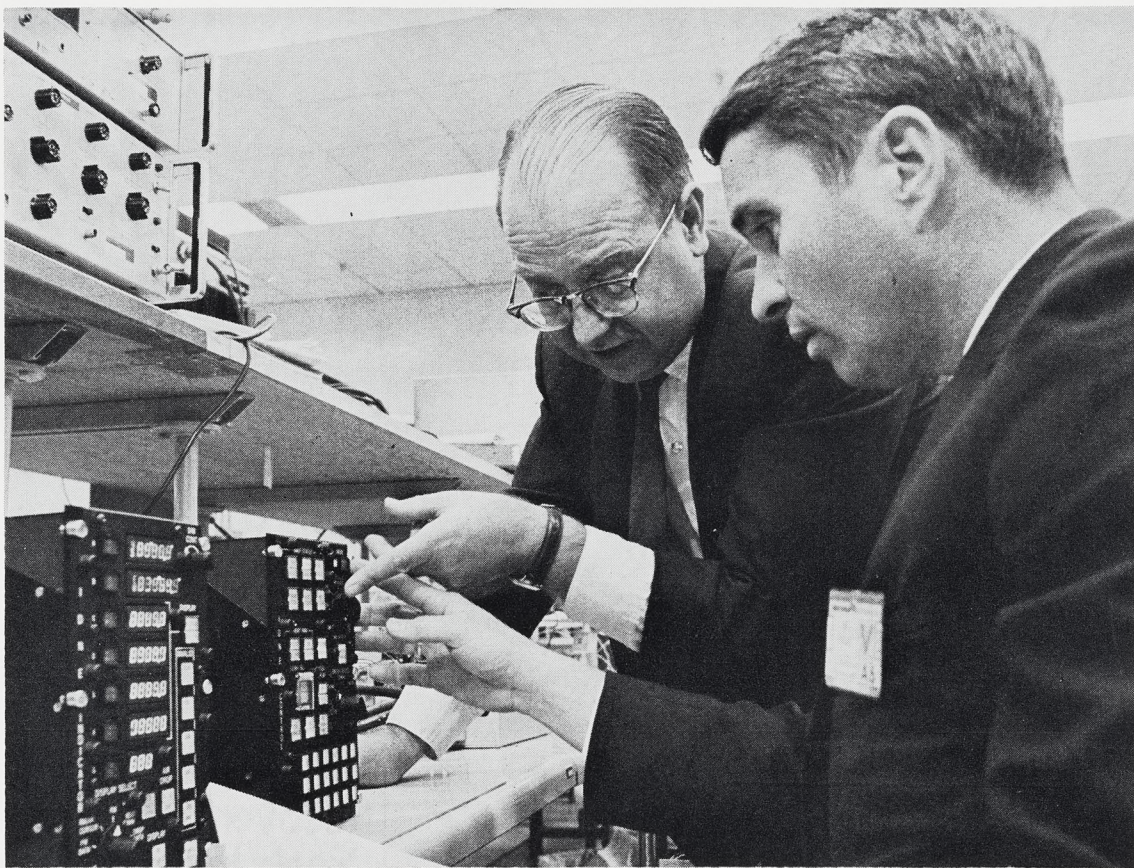
# NORTHROP NEWS

NORTHROP NORTRONICS

Published biweekly by Northrop Corporation, Beverly Hills, California

Vol. 25, No. 10

May 24, 1967



**FIRST DELIVERY**—Northrop Nortronics recently delivered its first C-5A equipment to Lockheed-Georgia. The delivery of the inertial-Doppler Navigation Equipment indicator and

control unit was made ahead of schedule. Ernie Brandi (left), Nortronics engineer and unit designer, and Tom Miller, Lockheed-Georgia representative, check out the completed unit.

## FARO Satellite Due For June 1 Launching

The Flare Activated Radiological Observatory (FARO), another in the Air Force Orbiting Vehicle (OV) series of satellites, is scheduled to be launched on June 1 from Vandenberg Air Force Base.

FARO, also designated the OV1-12, will be boosted into a circular polar orbit 300 nautical miles above the earth. From the instruments on the satellite, scientists will obtain data about the hazards imposed upon future astronauts by solar flares.

### Northrop Equipment

That's where Northrop's Physical Sciences Laboratory comes in. FARO will be equipped with a proton spectrometer, an electron spectrometer, two delta energy proton spectrometers, an X-ray detector and an omnidirectional high energy proton spectrometer (OHEPS) all designed and supplied by Physical Sciences with the aid of Dr. T. A. Farley, a consultant from the UCLA Institute of Geophysics, who worked with Northrop on the FESS satellite. These instruments will aid Lieutenant Larry Trafton, the Air Force Weapons Laboratory's chief experimenter on the OV1-12, in determining the radiation dose accumulated during solar flare activity.

### Similar To FESS

The FARO instruments are outgrowths of those launched on the FESS (OV1-2) satellite on October 5, 1965. (The FESS instruments continued to transmit data from space until last month.)

The OHEPS project scientist is Mac Morrison of the Physical Sciences Physics Laboratory. The project engineer is Mark Anderson. Mr. Morrison also will provide launch support for FARO.

The OV1-12 will be launched

with two other satellites in a technique that has been successfully used in several other OV1 satellite launches. It is anticipated that a successful FARO mission will lead to other satellites for the continuation of the investigation of solar flare hazards to the Air Force spaceflight programs.

## Van Aken Named President of Hallicrafters

Harrison Van Aken has been appointed president and chief executive of The Hallicrafters Company, Chicago-based subsidiary of Northrop Corporation, it was announced by Thomas V. Jones, Northrop president, and Robert F. Halligan of Hallicrafters.

Mr. Halligan, who has been president of Hallicrafters, will become chairman, succeeding his father, William J. Halligan, who will continue as a director of the subsidiary.



Mr. Van Aken

Mr. Jones said this move is part of an over-all program to expand the activities of Hallicrafters in the communications and electronics field. Also included in the expansion plans of Northrop-Hallicrafters is construction of a 210,000-square-foot facility at Rolling Meadows, a suburb of Chicago, which will house research, development and administrative functions. The facility will be completed and in operation this fall.

(See VAN AKEN, page 4)

## WALT DAVISON

### From Snark to Mariner

The man on crutches seemed strangely out of place.

A Cape Canaveral blockhouse buzzed with activity as the countdown approached zero.

Outside, on an all but deserted launch site, a Snark missile was poised for flight, awaiting only final calibrations.

Into this scene hobbled the man on crutches. He and a companion mounted a platform and a lift truck placed them alongside the waiting "bird." Deftly they made the calibrations, descended and walked away behind the departing lift truck.

### Another Success

A few minutes later another successful Snark launch was carried out.

"We laugh now, but on that particular day it was anything but funny," says Walt Davison. "On the way to work we had an automobile accident and I twisted my knee. The crutches were a must."

Walt Davison wasn't being heroic.

He merely wanted to keep intact a team that had calibrated Snark missiles at Cape Canaveral since the first launch.

The other member of that team was Al Edwards who suffered a split lip in the same accident.

### Still Teammates

Both Mr. Edwards and Mr. Davison are still "teammates," working for Northrop Systems Laboratories.

In Mr. Davison is epitomized the efforts of a relatively small (in numbers) group of individuals who have been in the forefront of Northrop's spacecraft efforts for more than a decade.

Mr. Davison came to Northrop in early 1952. He brought

with him nine years of Air Force experience and additional civilian experience in aeronautical electronics.

After a year of work as an inspector on the F-89, he was selected for research and development work on the family of guidance systems leading to the one employed with the Snark.

### On Launch Team

Since that time he has worked on initial Mariner and Ranger programs, on the OV2 family of spacecraft developed by Northrop and on the Apollo Pallet studies. He was a member of the launch team sent to Florida for the OV2-3 flight in 1965.

Currently, Mr. Davison is assigned to the Mariner Mars '69 Program in Technical Liaison Engineering.

Len Maurer, superintendent of NSL Manufacturing Operations at Hawthorne, says of Mr. Davison:

"Walt is a natural for any job. He can work with his hands as well as his mind. His experience enables him to spot problems and offer solutions. He is a self-starter. He requires little instruction. And he is extremely interested in his work, in seeing a job well done."

### Confidence A Must

Mr. Davison feels confidence is an essential attribute in spacecraft work; the knowledge that you have the skills to do the job. "Desire is important too, if you are honest enough to recognize your shortcomings and to seek help when you need it," he says.

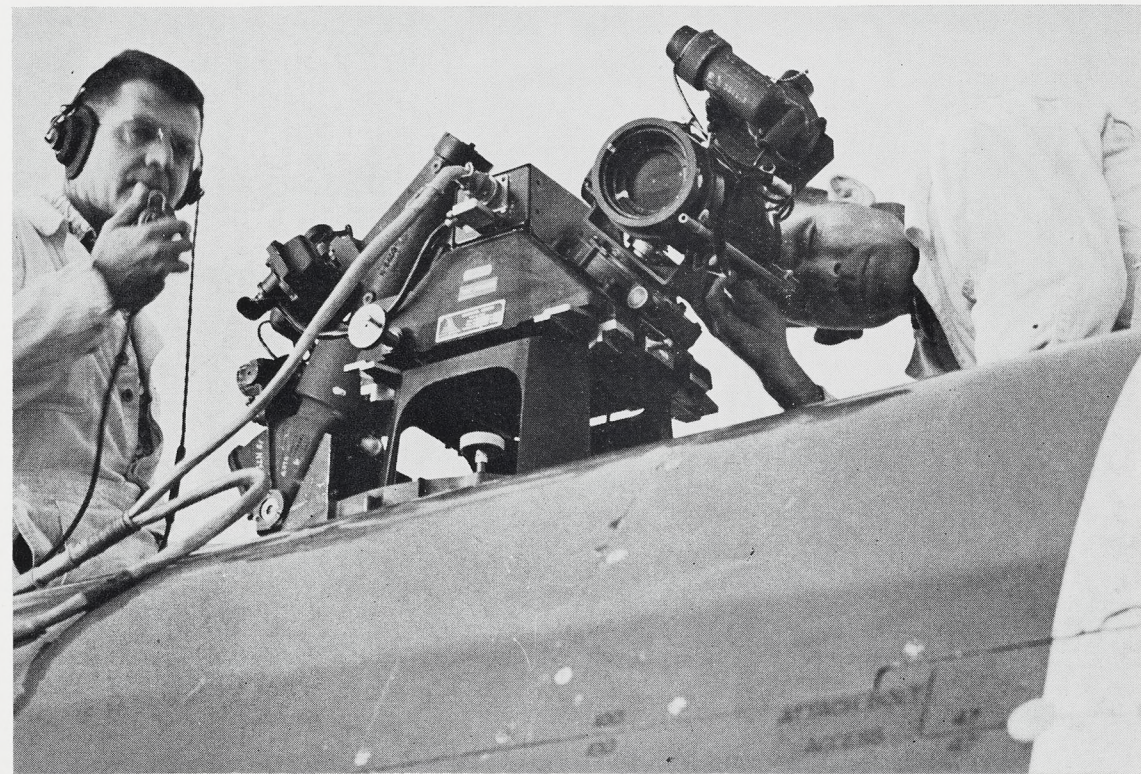
"I like to work with hardware," Mr. Davison says, "but more than anything else I like to work with really talented people. We have a lot at Northrop."

## Writers' Group Names Keithley To Directorship

Earl Keithley, a Northrop Nortronics Publications analyst at Anaheim, has been named a national director of the Society of Technical Writers and Publishers.

Mr. Keithley will serve for one year.

A member of the Orange County Chapter, STWP, for the past five years, Mr. Keithley was the chapter's chairman in 1965-66 and prior to that served as first vice chairman-publications. He edited the chapter's newsletter for two years.



**WELL-REMEMBERED RITUAL** performed just prior to launch of Snark missiles was final calibrations. Walt Davison (right) and Al Edwards performed this task for launches at

Cape Canaveral. Mr. Davison is typical of small group of Northrop Systems Laboratories personnel who have worked on all Northrop efforts involving spacecraft.



# Boeing Names Pilot For First 747 Flight

The Boeing Company has named Jack Waddell, a senior experimental test pilot, to be the first man to fly the world's largest airplane—the Boeing 747.

As flight pilot, Mr. Waddell will fly the giant 680,000-pound airplane on its maiden flight, scheduled for late next year. He also will be in charge of the 747 flight test program.

Northrop Norair is providing a 153-foot fuselage section for the 747, and Northrop Ventura is building wing fairings.

Between now and the beginning of actual flight operations, Mr. Waddell will work with 747 project engineers and airline flight personnel in developing pi-

loting procedures for the giant aircraft.

Through the use of computers and flight control mockups, Boeing and customer airline personnel already have established many of the flight and ground handling qualities of the 747.

Utilizing even more sophisticated equipment now being prepared, this work will continue right up to the first flight. The crew then will be thoroughly familiar with the airplane.

The airplane which Mr. Waddell will fly is Boeing's latest addition to its jet airliner family. It has an over-all length of 231 feet, a wingspan of 195 feet and a vertical tail which rises 63 feet above the ground, or about the height of a five-story building. Seated in the flight deck above the passenger cabin, preparing for takeoff, the crew already will be about 26 feet above the ground.

The 747 has four main landing gear units (two more than present-day jetliners) of four wheels each, and a dual-wheel nose gear.

## Rushmer Named To Management Development Post

Northrop Corporation has announced the appointment of John B. Rushmer to the newly created post of Corporate director of Management Development.



Mr. Rushmer

A native of Oakland, Mr. Rushmer began his career with the Standard Oil Company of New Jersey in Saudi Arabia where he created personnel development programs. He also has served in management development capacities in Iran, Peru, Ecuador, Colombia, and the United States.

In 1959, Mr. Rushmer was appointed dean of the School of Business and Public Administration at the University of Kansas City in Kansas City, Missouri. Since leaving the university, he has been a full-time management consultant.

At Northrop, Mr. Rushmer will devote his activities to the development of policies and programs designed to stimulate, encourage, and prepare capable Northrop management personnel for positions of greater responsibility.

## Memorial Day To Be Holiday

Tuesday, May 30, will be observed as a holiday commemorating Memorial Day throughout Northrop's West Coast facilities.

And for those desiring to make long-range plans, dates for Northrop's two "floating holidays" have been assigned.

The first will fall on Friday, November 24, the second on Tuesday, December 26. With the latter the annual Northrop year-end holiday will begin at the close of shifts December 22 and end January 1. Regular work shifts will resume January 2.

## Indianapolis Race Tickets Available

Northrop Personnel Activities offices are selling (for \$7.50 each) tickets to closed-circuit television showings of the May 30 Indianapolis 500 Mile Race.



ACADEMY SUPPORTER—Dr. Donald Hicks (left), Northrop Corporation vice president of Research, receives an award from Lt. General Thomas S. Moorman, superintendent of the Air Force Academy, for his support of the Academy's science study program.

This summer will be the third in which cadets will study with Northrop scientists in physics, mathematics and electronics. The award is a picture of Academy cadets during training.

## FOR HIDDEN AILMENTS

### Medic Alert—a Lifesaver

A shiny silver bracelet can be a great deal more than an article of jewelry—it can be a lifesaver for someone who has a physical handicap, severe allergy or hidden medical problem.

The bracelet (it also comes in necklace form) is the Medic Alert emblem. On one side, red letters spell out Medic Alert, and this is accompanied by the international medical symbol, the Caduceus.

On the other side of the emblem—which is made of sterling silver or stainless steel—is engraved the wearer's specific medical problem, serial number, and the emergency telephone number of the Medical Alert central answering file in Turlock, California. Complete medical information, address of physician and nearest relatives is available to physician and emergency personnel on a 24-hour collect tele-

phone call basis. In this manner, anyone with a hidden medical problem can feel secure that his illness will be recognized in time of emergency.

Dr. Richard J. Krebsbach, chief of the Medical group at Northrop Norair, is a member of the Medical Advisory Committee for Medic Alert.

He called the program "a very worthwhile endeavor," and said there are several Northrop employees now wearing Medic Alert emblems.

Dr. Krebsbach said persons with epilepsy, diabetes, severe allergies, heart trouble and other ailments which might be difficult to diagnose in time of emergency should consider wearing a Medic Alert emblem.

The non-profit organization was formed 11 years ago by a doctor in Turlock, whose daughter nearly died because another physician had given her an inoculation to which she was allergic.

Further information about the program may be obtained at any Northrop medical unit.

## NASA's Peterson Recovering From Crash Injuries

NASA test pilot Bruce Peterson is continuing to recover from injuries sustained in a crash landing May 10 of the Northrop-built M2-F2 lifting body research vehicle at Edwards Air Force Base.

The pilot-engineer returned to his home last week from March Air Force Base hospital where he was taken for initial treatment following the accident. After a weekend at home, he entered UCLA Medical Center Monday to begin a series of skin graft operations.

Skin grafts will be made, according to NASA, where moderately severe skin tissue damage was caused on the right side of Mr. Peterson's face. The only other injury noted by NASA was a fractured bone on Mr. Peterson's right hand.

Cards and letters may be mailed to the Medical Center, c/o Inpatient Department.

Cause of the crash, which severely damaged the M2-F2, is still under investigation, according to NASA.



HONG KONG IN CALIFORNIA—Northrop employees on an NRC-sponsored tour of the Universal Studios will see this waterfront scene on Saturday. The area is a duplication of the

Hong Kong harbor at the turn of the 20th Century. Friday is the last day to buy discount tickets for the tour. They are available at \$2.25 and \$1.25 at Personnel Activities offices.

## More Than 300 Helped By Blood Donor Program

Last year 303 Northrop employees and members of their immediate families received 1,062 pints of blood to aid in their recovery.

Had these individuals acquired this blood from commercial sources, they would have paid from \$25 to \$60 per pint.

Fortunately, they did not have to pay these prices, thanks largely to the volunteer donors who support the Northrop Blood Program. These volunteers, through their unselfish giving, make blood available for use by all employees and their families.

And there is always room for others who care to give to this worthy cause.

On June 1 the American Red

Cross will send its bloodmobile unit to the NRC Clubhouse in Hawthorne. It will operate from 9 a.m. until 11:30 a.m. and from 12:30 to 2:30 p.m.

Donor application forms are now available throughout the Hawthorne complex.

Volunteers who give not only help swell the Northrop Blood Bank credit, but also build individual credits. The latter, incidentally, can be transferred by the donor to a friend, if desired.

The figures include all blood donations made by employees at Norair and Nortronics facilities.

Northrop Ventura employees participate in a blood bank program conducted by the Tri-Counties Blood Bank, of Ventura County.



Classified

Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private businesses are not accepted. The Northrop News reserves the right to edit or omit ads. Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 62. Ads are limited to one item and one ad per person each issue. Deadline is noon Wednesday, one week before publication.

**For Sale**  
**Chevrolet**, 1959 Impala, V-8, auto., 4-dr., 61,150 miles, \$450. Long Bch., 429-0058. A  
**Platform Rocker**, gold uphol., blond wood trim, \$10. Redondo Bch., 378-0477. A  
**Own-Your-Own Apt**, 1-bdrm., unfurn., ground floor, patio, no children, no pets, lease, \$90 mo. rent or \$18,500. Inglewood, 674-4786. A  
**Pups**, toy poodle, AKC, 4 to 6 wks. old, males & females, black or white, \$75. & \$95. Inglewood, 671-8401. A  
**Formal**, blue, size 12, \$45. Norwalk, 868-1170. A  
**Boat**, 17' Rayson Craft, new 428 cu. in. Ford adjust. plate, in & out Casale V-drive, steel strut & rudder, single axle trailer, \$4,000. Hawthorne, 679-7274, 323-9570. A  
**Piano**, small, 66 keys, needs tuning, \$50. Hawthorne, 676-7632. A  
**Mustang**, 1965, w/w, radio, 6-cyl., standard trans., sports h/top, \$1,400. P.V. Pen., 377-3290 after 5 p.m. A  
**Chevrolet**, 1951 4-dr., new paint, good tires, \$150. Torrance, 532-7632. A  
**Cadillac**, 1961 Fleetwood, full power, low mileage, good tires, \$1,200. Yorba Linda, 714-528-0295. A  
**English Ford**, 1959 Consul, new clutch, \$250. Hawthorne, 676-7109. A  
**Wing Chair**, large, \$60. Hawthorne, 675-7965. A  
**Washer**, Westinghouse automatic, \$20. Hawthorne, 675-0891. A  
**Beds**, 2 orthoped, many other items, \$60 ea. Hawthorne, 673-3427. A  
**Honda**, 1966, Scrambler, 3,700 miles, \$450. Hawthorne, 679-0997. A  
**Air Conditioner**, Carrier, 1-ton, 117 volts, 12 amps., will deliver, beige console, cost \$300; \$48. Fullerton, 714-871-6703. A  
**Bay Quarter Horse Gelding**, permanent registered, trained for roping & barrel racing, sound & gentle, \$750. Hawthorne, 532-5028. A  
**Tiki**, approx. 7 ft. tall, \$25. Redondo Bch., 370-0342. A  
**Tenor Sax**, Bleucher, & case, resonator pads, \$195. Lakewood, HA 5-3584. A  
**Lakeview Lot**, new boat slip, Bass Lake, on quiet cove, timber, large, fairly level, \$3,500. Box 1001. A  
**Honda 305**, 1964, many extras, \$400. Fullerton, 714-525-4259, 714-525-4565. A  
**Coin Book**, 1909 to date, U.S. cent & many extras, \$100. Box 1002. A  
**Honda 305**, 1965, damaged, \$250. Redondo Bch., FR 4-0225. A  
**Tape Recorder**, Webcor, 4-track, 3-spd., stereo, 2 micros., 2 yrs. old, cost \$209; \$69.50. Hawthorne, 644-4705. A  
**Wheelchair**, Arrow, folding-type, all chrome, orig. cost \$175; \$85. Hawthorne, 675-8840, 645-2021. A  
**Encyclopedia**, Standard, 14 vols., 1964 ed., washable binding, excellent for children 9 yrs. old & up, \$150. Hawthorne, 378-0432, 676-5533. A  
**Pickup**, 1964 Chevrolet, 1/2-ton, 3 spd., w/overdrive & positraction, V-8 eng., low miles, \$1,550. Torrance, FA 8-2159. A  
**Great Books** of the Western World, \$200. Long Bch., 378-1645. A  
**Sunbeam Alpine**, 1955 roadster, new tires, good top, o/hauled eng., trans. & front end, \$350. San Pedro, 831-6560. A  
**Piano**, baby grand, Chickering, Louis IV styling, \$1,000. Gardena, 327-6849. A  
**Movie Camera**, 8mm, Kodak w/telephoto, wide angle & std. lens, light bar & case, \$25. Fullerton, 714-525-7685. A  
**Mountain Cabin**, stream, Mill Creek near forest home, 2-bdrm., bath, butane, \$6,500. Inglewood, PL 4-5358. A  
**Chevrolet**, 1959 El Camino, wrecked, 348 cu. in. eng., 4-spd. trans., good tires & uphol., \$325. Gardena, DA 4-5176. A  
**Corvette**, 1964, 327 cu. in., 300 h.p., 4-spd., air cond., AM-FM, fastback, \$2,995. Manhattan Bch., 545-2742. A  
**Mustang**, 1966 convt., 289 V-8, auto., p/s, p/b, r/h, w/w, other extras, still in factory warranty, \$2,250. Manhattan Bch., 379-3487. A  
**House**, 3-bdrm., R-2, 50'x150' lot, cpts., dps., tile bath, near schools, \$22,000. No. Redondo Bch., 370-0315. A  
**Sewing Machine**, Brother, portable, case, 5 yrs. old, zig-zag, different attachments, \$40. Inglewood, 673-3503. A  
**Water Softener**, Lindsay, auto. cycle unit, orig. cost, \$650; \$200. Gardena, 326-7327. A  
**Chevelle Top Boot**, 1964 model, never used, \$20. Manhattan Bch., FR 6-4677. A  
**Shaver**, Remington Roll-A-Matic 25, elec., & power scalp massage & brush, used very little, \$24.95. Hawthorne, 644-4039. A  
**Pontiac**, 1937 2-dr. coupe, \$225. Hawthorne, 678-6027. A  
**Guitar**, \$20. Inglewood, 671-3731. A

**For Sale**  
**Poodle**, toy, male, black, 12 wks. old, AKC, \$75. Inglewood, 324-8651. A  
**Home**, 3-bdrm., 1 1/4 bath, custom-built, cpts., dps., many deluxe bltin features, fenced rear yd. w/3 fruit trees, 2 miles from Plant I, \$28,500. Hawthorne, 675-8829. A  
**Oldsmobile**, 1963, F-85 Cutlass, trans. radio, htr., b/seats, floor console, \$1,135. San Pedro, 832-1886. A  
**Poodle**, toy min., champion stock, AKC reg., black & apricot, \$125. Torrance, 370-0606. A  
**Surfboard**, 9'10" Dewey Weber, car rack holds up to 4 boards, med.-sized surf jacket, \$95. Inglewood, PL 5-6830. A  
**Bedspread**, queen size, quilted aqua blue antique satin, 1 pr. matching drapes, \$17.50. L.A., AX 4-7348. A  
**Corvette**, 1962, h/top, 4-spd., 340 h.p., radio, \$1,795. Inglewood, 673-2421. A  
**Corvaair Monza**, 1961 w/1962 eng., 4-spd. trans., r/h, \$475. Rolling Hills, 831-9707. A  
**Air Conditioner**, Amana, 117 volts, fits in window, \$91.37. Torrance, 375-3756. A  
**Chevrolet**, 1964 Impala, 2-dr. h/top, fact. air, auto. trans., p/b, p/s, new w/w tires, orig. owner, \$1,800. Tarzana, 344-9466. A  
**Plymouth**, 1958 Suburban, 9-pass. station wagon, r/h, p/s, 8-cyl., \$290. San Pedro, 831-4735. A  
**Rims**, 4 Hollywood mags, 15" stock Chev., lug nuts & dust covers, 2 mos. old, \$100. Hawthorne, OS 6-3792. A  
**Accordion**, Excelsior, w/case, 120 bass, cost \$900; \$350. Inglewood, 679-6061. A  
**Relax-A-Cizor**, deluxe, cost \$250; \$90. Hawthorne, OS 5-7740. A  
**Rug**, w/pad, wool, hand hooked, green & beige, 9x13 1/2, \$45. Hawthorne, OS 9-8620. A  
**Chrysler**, 1964 New Yorker, 9-pass. sta. wagon, full power, air cond., luggage rack, AM-FM radio, rear speaker, \$2,750. Buena Pk., TA 8-2857. A  
**Reed Fencing**, 6', 25' roll, \$4. P.V. Pen., 377-3806. A  
**Washing Machine**, Bendix, \$20. Gardena, DA 4-7059. A  
**Apt. Bldg.**, 9 deluxe units, \$12,500 yearly gross, \$12,500 dn., \$105,000. Inglewood, 325-9832. A  
**Valiant**, 1960, \$295. Manhattan Bch., 545-2586. A  
**Home**, 2-bdrm. & den, 1,580 sq. ft., cpts., dps., landscaped, sell G.I. at CRV appraised price w/no dn., or w/10% down, \$27,500. Lomita, 372-0129. A  
**Corvaair Monza**, 1965, 2-dr. auto., 140 h.p., \$1,150. Hawthorne, 679-2041. A  
**House**, in Windsor Hills, 9 rooms, 3,500 sq. ft., 4 bdrms., lge. den, playroom, lge. pool, cpts., 15 yrs. old, lge. lot, \$46,000. San Pedro, 831-0480. A  
**Cabin Cruiser**, 16', sleeps 2, Evinrude Starlite 50, American trailer, bltin gas tank, fully equipped, \$875. Manhattan Bch., 372-1445. A  
**Yamaha**, 1964, elec. start, turn signals, recently o/hauled, \$250. Torrance, DA 6-7528. A  
**Falcon**, 1966 Futura, air cond., low mileage, many extras, \$2,295. Torrance, 378-8825. A  
**Chevrolet**, 1962 2-dr. h/top, \$700. Torrance, 371-4560. A  
**Home**, 3-bdrm., 2 baths, fam. rm., cpts., dps., landscaped, bltins, block wall fence, 3 yrs. old, near San Diego & Garden Grove Fwys., 5 1/4% FHA, \$25,950. Garden Grove, 714-892-3546. A  
**Refrigerator**, Frigidaire, deluxe model w/bottom freezer, 12.3 cu. ft., \$75. P.V. Pen., 377-8731. A  
**Refrigerator**, 2-dr., \$40. Hawthorne, 644-1504. A  
**Motorcycle**, 1965 Yamaha, 80 cc, o/sized knobby & Pirelli tires plus 2 new knobby tires, \$275. Hawthorne, 675-2761. A  
**Corvette**, 1963 coupe, 30,000 miles, fuel injection, disc brakes, 4-spd. Muncie trans., 7" American racing whls., AM-FM radio, \$3,000. Torrance, 328-2442. A  
**Chevy II**, 1962 Nova, 2-dr., 3-spd. stick shift, 6-cyl., \$700. Rolling Hills, 676-4973. A  
**Slide Trombone**, Bousher, B-flat, \$30. Redondo Bch., FR 5-5760. A  
**Surfboard**, 10' Mike Hynson, Gordon & Smith, \$95. Lynwood, 632-2642. A  
**House**, 3-bdrm., 1 1/4 bath, VA-FHA conventional bltins, forced air heat, near schools & shopping, \$27,500. Torrance, 371-3860. A  
**Chevelle**, 1965 Malibu, S.S., 327 cu. in., 4-spd., 1,800. Inglewood, 322-3357. A  
**Tapes**, 4-track auto stereo, various popular artists, cost over \$200; \$75. Lawndale, 676-6673. A  
**Chevrolet**, 1961 Impala, sports sedan, new tires, \$750. Torrance, DA 3-8797. A  
**Tape Deck**, Concertone, professional, 3+3 w/Reverse-O-Matic, \$250. Calabasas, 889-8179. A  
**Stove**, elec., Frigidaire, 4-burner, 30" width, full width oven & storage drwr., \$50. L.A., 754-4356. A  
**House**, 4-bdrm., 2 baths, swim. pool, near elementary & high schools, \$25,900. Torrance, 370-1472. A  
**Bed**, Salem maple, dble., mattress & springs, & 3-drwr. dresser w/mirror, \$45. Hawthorne, 679-8583. A  
**Harley Davidson**, 1935 Sprint, 250 cc, \$450. Inglewood, 674-1418. A  
**Pickup**, 1965 Chevrolet, 6 cyl., stick shift, r/h, hvy. duty springs, 6-ply tires, split rims, \$975. Redondo Bch., 376-3505. A  
**Guitar**, Gibson, thin back TS-125 w/leather case, Silvertone amp., \$200. Torrance, 714-527-4295. A  
**Daybed**, w/cover & bolsters, foam rubber top bolsters, \$10. Long Bch., 593-9748. A

**For Sale**  
**Pups**, miniature schnauzers, AKC reg., show quality, 2 males, 1 female, avail. June 1. \$100-\$175. Anaheim, 714-630-2453. A  
**Spark Plugs**, 2400 Ford Bosch, German made, wish to sell in bulk, \$.40 ea. Inglewood, PL 6-4424. A  
**Pontiac**, 1961 Tempest, 4-dr., r/h, auto. trans., good tires, 1 owner, \$450. L.A., 670-5627. A  
**Yamaha**, 1965, 250 Catalina YDS3, larger tires, \$50. & take over \$18.65 mo pymts., incl. insurance, \$225 bal. Torrance, 326-4075. A  
**Slip Lot**, house & boat dock, at Salton Sea, incl. water, sewers, street & elec., \$7,100. Anaheim, 535-1694. A  
**Table Saw**, 8", 2-wheel stand w/1 h.p. motor, 110-220VAC, \$45. Inglewood, 756-9697. A  
**Stereo Console**, small 36" long Columbia, 1 1/2 yrs. old, cost \$200; \$100. Gardena, 329-8162. A  
**Mattress & box spring**, full size, firm, tuftless, \$40. P.V. Pen., 377-7156. A  
**Falcon**, 1962 Futura, b/seats, r/h, 39,000 actual miles, \$495. Redondo Bch., FR 4-1509. A  
**Poodles**, miniature, w/AKC papers, 1 brindle, male & 1 black, female, \$125 ea. Inglewood, 755-6118. A  
**House**, & 10 units, furn., Spanish style, 75 x 200' lot, 5 1-bdrm., 5 2-bdrm., 2 1/2 bath, extras, \$20,400 total income for 1 yr., oil right incl., 60-70% loan, 15-20% dn., owner carry 2nd T.D., \$148,000. Hollywood, HO 4-1084. A  
**Artificial Plant**, 4 ft., lge. philodendron leaves intertwined w/manzanita wood, in 18" round white ceramic pot, orig. cost \$75; \$10. L.A., 474-0814. A  
**Refrigerator**, Philco, 11' freezer, \$25. Gardena, DA 4-7209. A  
**Lot**, in Modoc Recreational Estates in North- ern Calif., low monthly pymts. after small dn. if desired, \$1,795. Torrance, 834-2845. A  
**Mangle Ironer**, Kenmore, \$35. Box 1003. A  
**Wheelchair**, Everest & Jennings, cost \$145; \$90. L.A., 670-7324. A  
**Tape Recorder**, 1965 Akai, stereo, \$250. Torrance, 323-2242. A  
**Mobile Home**, 1964 Puritan Mayflower, 41' x 10', 1-bdrm., take over bal. of \$1,970. Santa Monica, 393-6931. A  
**Falcon**, 1966 station wagon, 4-dr., w/w, radio, 6-cyl., auto. trans., still under warranty, \$1,800. Box 1004. A  
**Bridal Gown**, imported white lace w/silk cathedral train, bouffant veil secured by a tiara of lace and pearls, size 10, cost \$150; \$75. Inglewood, 671-7292, OS 6-6390. A  
**Telescope**, 40 power scope w/tripod, \$5. L.A., 645-4697. A  
**Trailer**, 1952 Airstream, 16', self-contained, spare wheel & tire, enc. canopy, \$1,355. Hawthorne, 325-3546. A  
**Golf Cart**, bag & accessories, \$95. L.A. 756-6639. A  
**Guitar**, steel string, folk, w/case, \$30. Rolling Hills, FR 5-8536. A  
**MGA**, 1958, wire wheels, \$350. Torrance, DA 9-3286. A  
**Typewriter Table**, steel, dble. dropleaf, \$5. La Mirada, WH 1-6549. A  
**TV**, color, RCA black metal w/bronze legs, 4 yrs. old, \$175. Anaheim, 635-1686. A  
**House**, 3-bdrm., 2 baths, dining rm., cpts., dps., fireplace, near schools & shopping, 5 1/4% FHA loan, \$4,700 cash equity & assume balance of \$16,700. Yorba Linda, 528-4735. A  
**Bridal Gown**, empire fitted sheath, bell sleeves, veil, alterations incl., size 10, \$50. Garden Grove, 714-539-3925. A  
**Manifold**, & carbs. for Chevrolet, 283, dual quad, polished alum., \$40. Torrance, 328-6863. A  
**Chevrolet**, 1965 Impala, 2-dr. h/top, r/h, p/s, tilt wheel, new tires, 327 cu. in. eng., \$1,895. Redondo Bch., 327-2042. A  
**DeSoto**, 1955 Sportsman 2-dr. h/top, 1956 Chrysler N.Y. eng., needs work, \$50. Hawthorne, OS 9-3476. A  
**Enclosures**, w/Stephens 120 FR & University high-frequency horns, cost \$275, 6 mos. old, \$150. L.A., 295-1363. A  
**Pickup**, 1/2-ton, 1960 Chevrolet, r/h, \$700. Hawthorne, 676-5921. A  
**House**, 3-bdrm., 1 1/4 baths, family rm., bltins, cpts., dps., cork flooring, near schools, 10 mins. to Nortronics P.V., on view lot, \$36,900. Torrance, 375-6634. A  
**Pickup**, 1960 International, 4-spd. trans., 6-ply tires, \$500. Inglewood, 679-3735. A  
**Surfboard**, 9'4" Jacobs, \$50. Rolling Hills Ests., FR 8-5175. A  
**Fiat**, 1966 1100D, 4-dr., low mileage, \$1,105. San Pedro, FR 5-6017. A  
**Saddle**, adult western, \$30. Rolling Hills, 377-9927. A  
**Engine**, 1962 Chevy II, 6-cyl. w/bell housing, flywheel & clutch, 4,000 orig. miles, \$150. Redondo Bch., 370-7130. A  
**Pontiac**, 1962 Tempest Lemans, 3-spd. floor shift, b/seats, r/h, \$775. Inglewood, PL 4-6079. A  
**Acreage**, 10 acres near Willow Springs, on good road, grant deed w/\$700 dn., balance \$52.50 mo., inc. 6% interest, \$5,950. Torrance, FR 8-1026. A  
**Buick**, 1963 Riviera, air & full power, 31,000 miles, new tires, \$2,000. Torrance, 371-3492. A  
**Corvaair Monza**, 1964, 4-spd., new tires, new motor o/haul, \$900. Hawthorne, 675-8782. A  
**House**, 4-bdrm., 2 1/2 bath, cpts., dps., fireplace, forced air heat, sprinklers, patio slabs in, 10 mins. to Nortronics Anaheim, \$29,500. Yorba Linda, 714-524-2676. A

**For Sale**  
**Surfboard**, 9' yellow fiberglass, \$75. Torrance, 326-3905. A  
**Porsche**, speedster, for street slalom or racing, specially prepared new eng. & suspension, incl. all options, \$1,967. Box 1005. A  
**Motorcycle**, 1966 BSA, 441 cc Victor, 3,500 miles, \$650. Hawthorne, OR 7-0425. A  
**Hide-A-Bed**, Simmons, lge. size & 2 chairs, rocker & recliner, \$150 or sell separately. Gardena, DA 4-2972. A  
**MG Magnette**, 1958, new uphol., clutch & tires, \$675. Torrance, FR 9-5690. A  
**Planer**, 6" thickness, \$40 & other power tools. San Pedro, 831-5304. A  
**Ford**, 1962 Country sed. station wagon, 1-owner, stick shift, r/h, \$595. So. Gate, ME 3-2395. A  
**House**, 4-bdrm., family rm., 2 1/2 baths, 1 acre, horses OK, near Northrop Ventura, \$35,000. Somis, 805-482-1186. A  
**Tape Recorder**, Ampex 2075, self-contained, stereo, w/auto. threading & reverse, retail \$559; \$410. P.V., 541-1452. A  
**Boat**, 14', 100 h.p. Mercury motor, w/trailer, \$1,100. Lawndale, 370-0426. A  
**Triumph**, 1966 TR4A, r/h, spoke whls. w/ knockoffs, tonneau, \$2,300. Rolling Hills, 375-6306. A  
**House**, 2-bdrm., completely remodeled, 10 mins. from Nortronics Hawthorne, \$16,000. Inglewood, OS 5-4393. A  
**Go Kart**, Mac 9, Dyna drive, 90 mph, \$175. Anaheim, 714-828-5626. A  
**House**, 3-bdrm., beam ceiling den, patio, fenced yd., paneled living rm., bkfst. bar, 10 min. to Norair, \$21,450. Gardena, DA 9-2904. A  
**Window**, alum. casement, 4' by 10', 2 sliding panels, 1 fixed panel, screens & mounting hardware, \$60. San Pedro, 833-6704. A  
**Motorcycle**, 1962 Triumph, 500 cc, some custom work, 13,000 mi., \$650. Inglewood, 677-4312. A  
**Boat**, 15' Allen w/Merc. 700, full gear shift, lge. wheel trailer, many extras, \$1,050. Torrance, 378-7642. A  
**House**, 3-bdrm., 1 1/4 bath, fireplace, dining rm., utility rm., entry hall, 220 wiring for stove & dryer, block fence, near El Camino, \$26,850. Redondo Bch., 373-1196. A  
**House**, 4-bdrm., 2-story, 2 1/2 baths, block wall, landscaped new cpts., G.I. loan, 1,850 sq. ft., h/wood floors, \$30,500. Cypress, 714-828-9075. A  
**Sloop**, 32', 7/8 rig, fiberglass construction, stainless rigging, sleeps 6, head, 135 watt marine radio, RDF, 3 mains, 2 genoas, spinnaker, suitable for offshore racing/cruising, desire partner(s) or will sell outright, \$11,950. Box 1006. A  
**Pontiac**, 1965 GTO, 4-spd., p/b, p/s, vibra-sonic radio, vinyl top, 28,000 mi., \$2,175. Long Bch., 423-5844. A  
**House**, 2-bdrm., lge. fenced yard, Carson-Dominguez area, G.I. appraisal, no down, \$17,500. Torrance, TE 5-2630. A

**Wanted to Buy**  
**Freezer**, upright, late model, must be reasonable. Torrance, FA 8-3306. B  
**Skindiving** Equipment, mask, fins, snorkel, & speargun, & scuba if price is right. Hawthorne, 676-7344. B  
**Bicycle**, Schwinn, man's 3-spd., reasonable. Torrance, FR 1-1096. B  
**Racing Bicycles**, 2, man & woman's. Lawndale, 679-6494. B  
**Basketball** Goal & Backboard, also basketball. Setup suitable for outside use. Rolling Hills, FR 5-9689. B  
**Magazine**, Arizona Highways, Feb. 1952 issue. L.A., OR 7-5273. B  
**Pickup**, 1966 Datsun, \$1,000. South Gate, 638-3489. B

**For Trade**  
**Cad-Aillard**, K-3 roadster, convt. top, all orig. equip., trade for Lido 14' sailboat or late mod. road motorcycle. Culver City, EX 8-5019. A  
**Free (To Be Given Away)**  
**Kitten**, 8 wks. old, male, Orange, 714-633-4720. D  
**Dog**, doberman mix, 3 1/2 yrs. old. w/doghouse. Cypress, 714-827-9356. D  
**Pup**, basset, male, AKC reg., 18 mos. old, tri-colored. L.A., 426-6882. D

**Rentals Offered**  
**Apt.**, deluxe, 2-bdrm., furn., lge. pool & patio, closed gar., near El Camino, \$140. Torrance, DA 9-5986. E  
**House**, 3-bdrm., 1 1/2 bath, hobby rm., fireplace, cpts., patio, lge. fenced yd., 12 mins. to Nor. Anaheim, avail. June 1, \$155 mo. Orange, 714-538-7648. E  
**House**, 2-bdrm., 1 1/2 bath, cpts., dps., bltins, near recreation & stores, \$125. Inglewood, 644-2565. E  
**House**, 3-bdrm., 2 baths, near schools & shops, cpts., fenced, water softener, water pd., avail. June 15, \$145 mo. Newbury Pk., 805-498-3331. E  
**Cabin**, Lake Arrowhead, close to lake & village, stream, modern utilities, \$60 wk. No. Hollywood, 761-9645. E  
**Apt**, furn., single, lge. closets, closed gar., \$95 mo. Torrance, FR 5-0867, 320-2050. E  
**House**, 2-bdrm., dps., gar. & garbage disp., small fenced yd. in rear, \$110 mo. Hawthorne, 370-4494. E  
**Vacation Cottages**, Idyllwild, 1 & 2 bdrms., fireplace, stream, patios, \$20-\$35 w/ends; \$45-\$70 wk. L.A., PL 4-5288. E  
**Cabin**, A-Frame, furn., sleeps 5, 40 miles from Colorado Springs, near 2 lakes & river, \$70 wk. Granada Hills, 894-1937. E

**Rides and Riders**  
**Rides Wanted**  
**7 a.m. — 3:42 p.m.**  
**Prospect & Beryl**, Redondo Beach. Diane Erickson, Norair, ext. 2605, FR 4-8690. A  
**7:15 a.m. — 4 p.m.**  
**Artesia Blvd. & Manhattan Beach** or 164th St., off Inglewood Ave., Redondo Beach. Harriet J. Chaney, Nor. Hawthorne, ext. 510, 370-7702. A  
**7:20 a.m. — 4:05 p.m.**  
**Anaheim St. & Figueroa St.**, Wilmington. Tom Henrich, Mariposa, ext. 4040, 835-9070. A  
**7:30 a.m. — 4:15 p.m.**  
**Marine & Highland**, Manhattan Beach. L. Berg, Norair, ext. 2763, 545-1662. A  
**Santa Ana-Tustin Area** to Hawthorne, Santa Ana. R. B. Speed, NSL, ext. 2883, 714-544-2261. A  
**8 a.m. — 4:45 p.m.**  
**Proctor & 5th**, La Puente. Norma Gallagher, NSL, ext. 2711, 333-7287. A  
**Torrance Blvd. & Catalina Ave.**, Redondo Beach. Patricia Hauser, NSL, ext. 2711, 2712, 2713, FR 6-3208. A  
**Topanga Canyon Blvd. & Fallbrook Ave.** or Platt Ave. & Vanowen Blvd., Canoga Park. Stanley J. Ehlinger, Nor. Hawthorne, ext. 462, DI 8-3289. A  
**Anza Ave. & 190th**, Torrance. Iva M. Eis, Norair, ext. 2013, 2014, FR 1-3802. A  
**Rosecrans & Western**, Gardena. Jodee Parker, NSL, ext. 4720, 323-8165. A  
**Rides Offered**  
**7:30 a.m. — 4:15 p.m.**  
**Santa Ana-Tustin Area** to Hawthorne, Santa Ana. R. B. Speed, NSL, ext. 2883, 714-544-2261. A  
**8 a.m. — 4:45 p.m.**  
**Topanga Canyon Blvd. & Fallbrook Ave.** or Platt Ave. & Vanowen Blvd., Canoga Park. Stanley J. Ehlinger, Nor. Hawthorne, ext. 462, DI 8-3289. A  
**Rentals Offered**  
**Vacation Cabins**, Lake Gregory & Crestline, make reservations early for June through Sept., \$25 w/ends; \$60 wk. Venice, EX 1-2040. E  
**Apt**, 1-bdrm., cpts., dps., bltins, closed gar., all elec., 5 mins. to Nortronics P.V., 15 mins. to Norair. \$85 unfurn; \$105 furn. Torrance, 375-2091, 375-9397. E  
**Cabin**, Big Bear Lake, sleeps 7 to 9, \$18 w/end; \$50 wk. Bellflower, TO 7-0662. E  
**Apt**, deluxe 1-bdrm., pool, \$95 mo. Redondo Bch., 376-2117. E  
**Cabin**, Green Valley Lake, \$55 wk. Torrance, 320-2002. E  
**Rentals Wanted**  
**Girl**, 18-25, to share 2-bdrm. apt. or share lge. 1-bdrm. where I am living now, I have most furniture, Bay area, \$42.50 now, up to \$65 for 2-bdrm. Harbor City, 325-1813. F  
**Duplex**, or House, semi-furn., 2-bdrm. in Lennox or Inglewood area, fenced yd., gar., pre-schooler, pet, no higher than \$110. Torrance, 835-8738. F  
**House**, 2-bdrm., w/yard, Lomita or Torrance area, around \$100 mo. Wilmington, 835-9070. A  
**Lost**  
**Paper Stapler**, heavy-duty, if found please return to Print Control, 5351/32, Engineering Center. J  
**Personals**  
Anyone interested in joining a boy's Brooklyn High alumni organization, please call Gardena, DA 9-1526. L  
**Words** cannot express the heartfelt appreciation for the kind expressions of sympathy, cards & flowers from our fellow Norcrafters at the loss of John, our beloved husband & father. DOROTHY BALDWIN & LINDA KOCH. L  
**My** heartfelt thanks for your thoughtfulness & kind expressions of sympathy at a time when it was deeply appreciated. MRS. ARTHUR K. FABER. L  
**I would like** to express my deepest appreciation to those who thought so highly of my dearly departed husband, George Pettus. In my time of deep grief, everyone was wonderful. Special thanks to Mr. Paul Crews for his words of comfort. MRS. GEORGE PETTUS. L

**For Sale or Trade**  
**Movie Projector**, Keystone K 100 8mm, w/case, reel, \$45 or trade for 35mm slide projector w/remote control. Box 1007. M  
**Capacitor Tester**, Eico Mod. 955 In-Ckt., bridge-type, factory blt. & tested, never used, \$30 or trade for .22 cal. pistol or rifle. Box 1008. M

**Scouts Win at Parade**  
A Monterey Park Boy Scout troop with two Northrop Corporation leaders walked away with the top prize among 191 participating units in the May 6 Monterey Park "Play Day" parade. Jim Adams, Nortronics Facilities administrator for Hawthorne and Palos Verdes, is assistant scoutmaster of the unit, Troop 303. Mac Roth of Norair is the troop's committee chairman.



# Nortronics' Frohlich Elected Jaycee Chief

California Junior Chamber of Commerce members this month picked a Northrop Nortronics man to serve as their highest officer — state president — for the coming year.



Mr. Frohlich

He is A. S. (Andy) Frohlich, supervisor of Contract Estimating at Nortronics Hawthorne.

As president of one of the nation's largest Jaycee organizations, Mr. Frohlich moves another step forward in a long and colorful career of Jaycee service which spans a decade and includes many individual honors.

Over the years Mr. Frohlich has been recognized as the outstanding Jaycee district governor in both California and the nation. He was also California's

outstanding national director and institutor of the outstanding new project in his district and state. Mr. Frohlich is considered one of the top spokesmen for the Jaycees in California and in a recent 10-month period spoke before more than 150 Jaycee chapters and outside organizations. He has won a flock of individual honors for his speech work.

In Alhambra, his hometown, Andy Frohlich served as Jaycee chairman, director, secretary, vice president and as a state director. He was also a district chairman, state subcommittee chairman, state chairman and district governor. He has also served as a national Jaycee director.

In his work with the Jaycees Mr. Frohlich has traveled the nation, attending special and regular meetings, conferences and special events in each of which he took an active part.

Mr. Frohlich is the father of two busy youngsters and finds time to be active in city government, Cub Scouts and church events.

Mr. Frohlich joined Northrop Nortronics five years ago and has been an active working member of the Nortronics Management Club since its re-organization.

## Bible Study Group Sets Meeting Time

A new Bible Study Club organized at Nortronics Anaheim last month has established a regular meeting schedule.

The group meets during the 11 to 11:45 a.m. lunch hour Monday, Wednesday and Friday in Conference Room 339, Building Y-1.

This non-denominational group features outside speakers, both ordained and laymen. Ronald Inman is serving as NRC commissioner.

The group now has more than 20 members. Further information may be obtained by contacting Anaheim Personnel Activities on ext. 244. The study organization is open to all employees.

## Camping Club Plans Escondido Weekend

Northrop's Wanderers will journey to the Elfin Forest at Escondido over the coming weekend, May 26-28.

A potluck dinner will be held Saturday at 5 p.m.

## Eleven Complete Toastmaster Class

Eleven sons and daughters of Nortronics Anaheim employees received merit certificates from Toastmasters International early this month upon completion of a "Youth Leadership" course.

The course, sponsored by NRC and conducted by the Toastmasters, was held over a period of several weeks. Youngsters were instructed in speaking, conducting business meetings and self-improvement. Art Bowser of Nortronics was the instructor.

A second program is currently planned to begin in the fall. Advance registrations are being accepted by Personnel Activities at Anaheim.



BEHIND THE SCENES look at Northrop Data Processing Center was one feature of a unique familiarization course held recently at request of Material Control personnel at Hawthorne and

Anaheim. Students attended voluntarily and on their own time to learn more about the jobs they perform. Hal Worrel (gesturing) arranged and taught the class.

## MATERIAL CONTROL

### Twelve Go 'Back to School'

Credit is due to a select group of Material Control employees from Northrop Nortronics for displaying an unusual interest in the performance of their normal duties.

This month they went "back to school" voluntarily, and on their own time, to learn more about how the work they do affects a total system.

Taking part were 12 employees with both Nortronics Hawthorne and Nortronics Anaheim facilities represented.

The turnout was, in fact, 100 percent for Material Control employees who make contributions on a day-to-day basis to Nortronics' Materials Integrated Information System (MIIS), an automated material inventory control system.

Although intimately familiar with their own contributions to MIIS, these employees wanted to know more about the total system, how it works, what happens to various inputs, and how various elements come together to make the system tick.

Hal Worrel, a systems engineer in Nortronics' Business Sys-

tems Development unit and one of the principal architects of MIIS, discussed this with individuals. Then he proposed a familiarization or orientation course he would instruct.

Acceptance was instantaneous.

So on May 11 the "students" gathered at Nortronics Hawthorne. They spent two hours during which they were briefed on the entire MIIS concept and its operations. They capped the evening by visiting the Northrop Data Processing Center where MIIS is computed.

Dick Shave, chief of the Management Systems group, indicates the interest of these employees has paved the way for additional sessions of this type in the future. Such sessions could be tailored to fit the requirements of various functions and groups at Nortronics, he said.

## Anaheim NRC Pledges Funds To Boy Scouts

Nortronics personnel at Anaheim have given an assist to the Capital Fund campaign being conducted by the North Orange Council, Boy Scouts of America, through action taken by Northrop Recreation Club.

The Capital Fund drive is aimed at raising \$680,000 for use in expanding or improving facilities or centers used by Scouts in North Orange County.

In its continuing efforts to support Boy Scout activities, NRC pledged to raise funds to purchase one acre of land for the purpose of expanding Camp Ahwahnee, a facility utilized by all Scouts in the area.

Northrop Recreation Club is a long-time supporter of scouting in Orange County. Currently, NRC sponsors a Cub Pack, a Boy Scout Troop and a Special Interest Explorer Scout Post.

## The Bustamante Family—A First Annual Reunion

If a family has never held a reunion, what can you expect when planning the first?

This question plagued Milton Bustamante for months as he laid the groundwork for a May 14 gathering of his family at NRC Clubhouse, Hawthorne.

Mr. Bustamante's worries were pointless. Before noon 60 members of his family—brothers, sisters, nieces, nephews, children and grandchildren — had gathered and the party was off to a whooping success.

A Northrop Nortronics Maintenance employee at Hawthorne, Mr. Bustamante and his wife dreamed up one novel surprise for the reunion—a family tree.

As the trunk they had Mr. Bustamante's father and mother who came to California around the turn of the century from Texas. There were limbs for five surviving brothers and sisters and two who have passed on, plus branches galore for members of each branch of the family.

When the count was made it was determined the oldest member present was a young 70 years; the youngest, less than a year old.

Mr. Bustamante is now look-

ing forward to the next reunion and many subsequent ones. The family voted as one to hold them annually in the future.

Taking part were family members from Los Angeles, Orange and Ventura Counties. From others, living in distant cities, came greetings and regrets that they were unable to attend.

## VAN AKEN

(Continued from page 1)

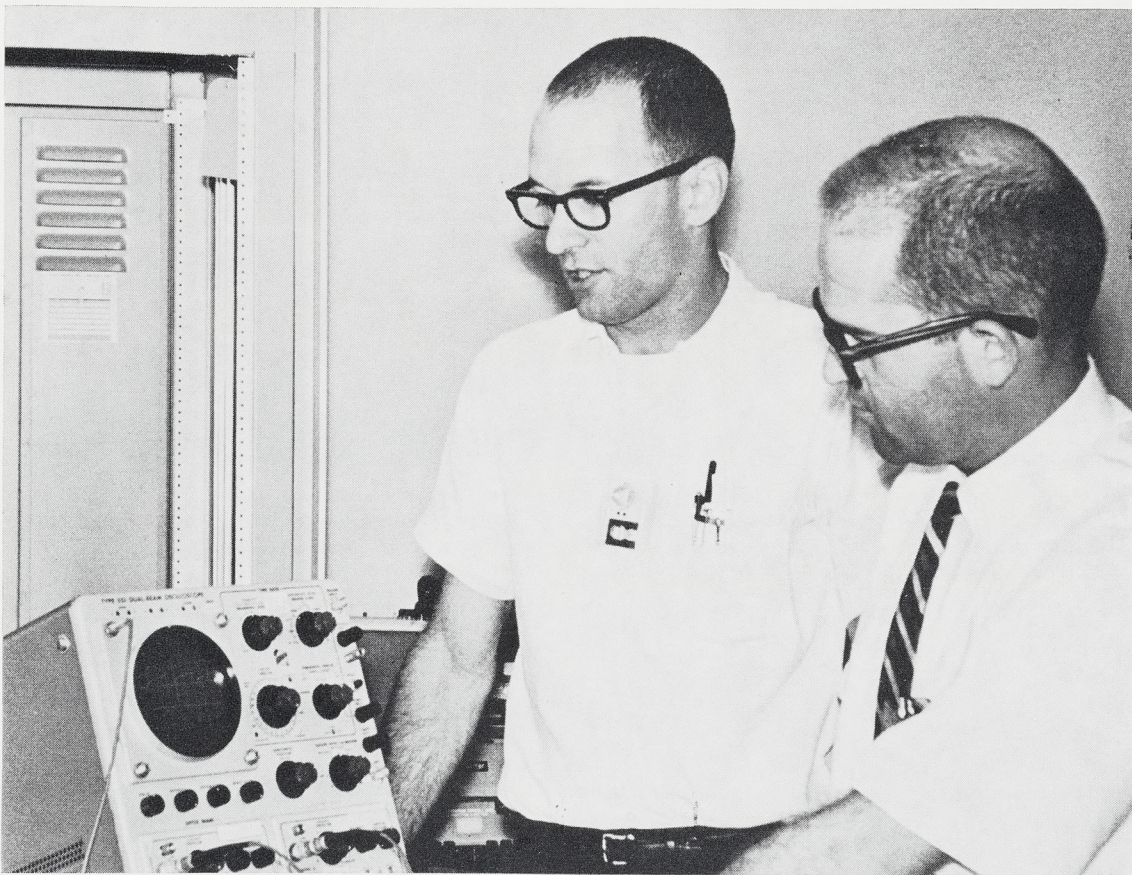
A native of Lyons, Kansas, Mr. Van Aken has been with the General Electric Company since his graduation from Brown University in 1936. He has held a succession of key management posts, including assistant general manager of the radio and television department, general manager of the communication products department, and general manager of the computer department. Most recently he has been at General Electric headquarters in New York in charge of overseas operations of the information systems division, a post which he resigned to accept the presidency of Hallicrafters.



'CLEAN' CONTINUES—Palos Verdes Maintenance Foreman Dan Gravlin reminds you there is only a short time left in which to earn the Good Filekeeping Seal of Approval, during

Operation Clean. Surrounding Mr. Gravlin is some of the surplus furniture turned in at Palos Verdes by GFSA winners. Operation Clean ends at midnight May 31.





**PLANNING CONTINUES** — Engineers Phil Halbert (left) and Evan Zelin examine components to be included in the Vigicon command and control display system being installed at

Nortronics Palos Verdes. The system will be in use by late summer. The display system will expand Nortronics' demonstrational capabilities on the Vigicon system. See story on page 4.

## Employees Get Boost In Wages and Benefits

Northrop Nortronics employees throughout the state, in accordance with the company's policy of maintaining wages, salaries, and fringe benefits to compare favorably with those throughout the industry, last week received increases in pay, cost-of-living adjustments and other benefits.

Announcement of the wage and benefit adjustments was made by Frederick Stevens, Corporate vice president and Nortronics general manager.

"Your management engages in continuous studies to assure that this traditional Northrop policy is continued," Mr. Stevens said in his announcement.

"Based on these studies, and in accordance with this policy, I am pleased to announce these changes and revisions."

For salaried personnel, existing rate ranges increased in accordance with industry practice. Individual salary increases will continue to be based on merit.

Mr. Stevens also announced several changes in company-paid group insurance plans, including an increase in hospital room and board from \$30 to \$33 a day for employees and their dependents, at no additional cost to the employee.

Another benefit, affecting participants in the Salaried Savings Plan, will become effective on August 1. Employees in the plan, upon completing three years of participation — whether interrupted or not — will be eligible to increase their contribution from 5 to 8 percent of their weekly salary. Previously, three years of uninterrupted participation was required.

"Our continuing objective in personnel compensation is the

satisfaction of the real needs of the men and women of Northrop," Mr. Stevens said.

"We feel that these improvements will meet this objective and provide benefits comparable to the best in our industry."

## 'Toastmistress' Club Organizes Planning Group

A new Northrop Toastmistress Club for the Hawthorne area appears to be "off and running" after a series of events leading to its formation.

The ladies took part in a Northrop Toastmasters' meeting and held organizational meetings. At one of the latter an acting group was formed to lead the planning. Shirley Wilson is chairman of this group.

Next meeting, open to all Northrop women, will be held at 6 p.m., June 14 at Dandel's Restaurant on Western Avenue. Contact Shirley Wilson, ext. 1791, or Personnel Activities at Norair, ext. 2486, for information.

## Nortronics Men Installed by IEEE

Members of the Northrop Nortronics Automation Systems section at Anaheim were much in evidence recently as the Orange County Section, Institute of Electrical and Electronic Engineers (IEEE), installed new officers.

John Gillings of the section was the outgoing secretary. Incoming officers included George Nagy, treasurer, and Paul Bogness, secretary.

## Coin and Stamp Show To Become Annual Event

An estimated 300 persons attended the first NRC Stamp and Coin Show, held on May 21 in the NRC Clubhouse in Hawthorne.

The top prize for the best coin exhibit went to Ed Bentley of Norair Numeric Design, for his display of commemorative coins.

Mrs. George Metzger, wife of a Northrop retiree, was named the winner in the best stamp display category for her exhibit of Japanese air mail stamps.

Stamps and coins from throughout the world were on display.

## \$300,000 SAVED

### Operation Clean a Success

With final reports still to be filed, Operation Clean appears to have racked up substantial savings for Nortronics.

By the end of the fourth week of the drive, it was estimated that \$300,000 savings would be realized. A large portion of this saving will result from the return to stock of furniture and equipment. Literally dozens of file cabinets, desks and drafting tables have been returned to the equipment pools at Nortronics facilities in Anaheim, Hawthorne and Palos Verdes.

Anaheim, under the direction of Doug Leavenworth, had made savings totaling more than \$175,-

000 as Operation Clean headed to its conclusion. One organization alone returned nearly 900 three-hole binders.

The Hawthorne campaign, which was spearheaded by B. D. Spafford, produced several truckloads of office equipment and materials that will be returned to stock for reassignment.

The Palos Verdes effort, directed by Floyd Priest, was concentrated on saving space to facilitate the move of former NSL personnel to Palos Verdes. Return of extra equipment to stock provided the space needed and also eliminated the need to make purchases of new furniture.

## DISTRIBUTION BEGINS

### Drafting Standards Manual Complete

An important new tool for use by all design and drafting personnel assigned to Northrop Nortronics West Coast facilities is being distributed this month.

It is a new Drafting Standards Manual (DSM), the first of its type ever compiled for general use by all Nortronics engineering personnel in California.

Previously, separate manuals of this type have been used at each of the Nortronics facilities.

With the new manual Nortronics is establishing a firm base for maintaining uniformity of drawings throughout West Coast operations. It will serve all personnel associated with the preparation of such engineering data as drawings, lists and specifications.

The new Nortronics DSM represents a compiling of source material and information from many areas which has been consoli-

dated in a simple and easy-to-use format.

More important, the entire DSM has been written around the very latest governmental specifications and standards.

Work on the new manual began last October with the selection of a working committee composed of representatives from major functions and establishments.

Charles Goodwin (Configuration Management) has served as committee chairman. Committee members included Henry Young (Hawthorne), Roy Charlton (Mechanical Design), Alan Riese (Ordnance), Harry Williams (Configuration Management), Tom Fall (Northrop Systems Laboratories), Robert Moore (Automation Systems) and Evelyn Price (Publications).

Initial distribution is being made of the first four of 17

planned sections. Subsequent distributions will be made until the manual is complete in late summer.

To be contained in two loose-leaf type volumes, the total DSM will contain well over 400 pages. Approximately 400 illustrations will be included in DSM.

R. L. Gibney, director of Administration and Control, noted: "This new manual provides us with a single source of information on standards and specifications from which to compile engineering data. It will promote uniformity in our efforts and allow maximum coordination throughout our operations."

"The personnel responsible for its preparation have done an outstanding job, one that will benefit all people at all facilities. They deserve a great deal of credit for a job well done," Mr. Gibney added.



**HONORARY DEGREE**—Thomas V. Jones (right), Northrop Corporation president, talks with Supreme Court Justice Tom Clark after they were awarded honorary doctor of laws degrees Sunday by George Washington University, Washington, D.C. Other recipients were Senator Edward Brooke of Massachusetts, General Lyman Lemnitzer and Arkansas Congressman Wilbur D. Mills.



## Equipment Delivered To CASA for F-5's

One of the largest aircraft component shipments in Northrop history was dispatched by Norair recently to CASA (Construcciones Aeronauticas, S.A.), the Spanish company which will produce F-5 fighters under li-

cense from Northrop for Spain's Air Force.

The shipment of components comprised knockdown kits of F-5A and F-5B aircraft in various phases of assembly that will be used in accelerating establishment of the CASA production line.

Construction of facilities, design and manufacture of tools and planning for the F-5 manufacturing process are well under way and on schedule, according to CASA officials.

To date, CASA has completed several thousand tools, all necessary machinery has been ordered, and new or remodeled facilities for chem milling and bonding are being readied.

Working with CASA are members of a Norair Technical Assistance team, with members located at Getafe, outside of Madrid, and at Seville.

The program provides for the manufacture of 36 F-5A single seat and 34 F-5B two-seat versions of the supersonic fighter.

Although most of the raw material and equipment items are being procured through Norair, CASA will manufacture many complex subassemblies including the landing gear and certain hydraulic cylinders.

## A. C. Rubel Dies Following Heart Surgery

A. C. Rubel, prominent oilman, who had been a director of Northrop Corporation since July 1957, died last week following heart surgery.

Flags were flown at half staff at all county buildings and at many other establishments, including Northrop, in tribute to Mr. Rubel. As chairman of the County Citizens Efficiency and Economy Committee, Mr. Rubel was responsible for important changes in county government in recent years.

"We at Northrop are all saddened at the death of Cy Rubel," said President Thomas V. Jones. "As a member of the Northrop board, he contributed much to the direction and progress of the company. We will miss him very much."



Mr. Rubel

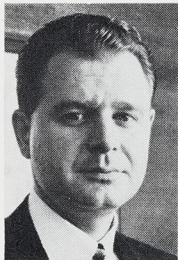
## Delsasso Named To European Post

Richard L. Delsasso has been appointed director of Administration and Plans for Northrop's European office, Glenn R. Lord, Corporate vice president of Marketing, has announced.

The appointment will become effective on June 14.

Mr. Delsasso will be responsible to the vice president and manager of European operations, and will conduct the business and administrative operations of Northrop S.A. and the Paris office.

Mr. Delsasso has been with Northrop for 10 years.



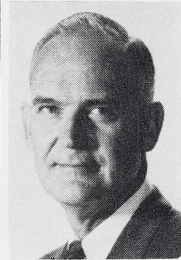
Mr. Delsasso

## Clair L. Peck Elected To Board Of Directors

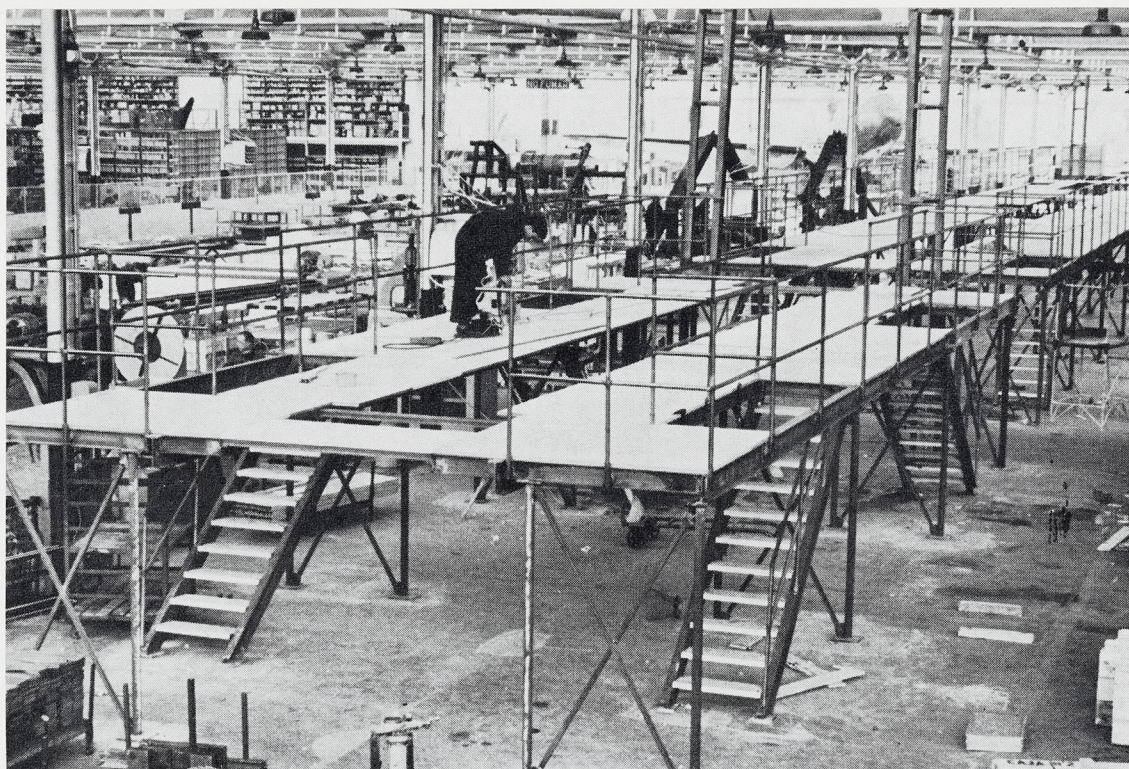
Clair L. Peck, jr., was elected a member of the board of directors of Northrop Corporation on May 23, Thomas V. Jones, Northrop president, has announced.

Mr. Peck is general manager of C. L. Peck Contractor, leading Southern California building contracting firm.

Mr. Peck holds a number of other directorships. He is a member of the board of the Investment Company of America, Farmers Insurance Group, and the Fire Underwriters Association. He also serves on the boards of the YMCA of Los Angeles, the Children's Hospital of Los Angeles and Harvey Mudd College.

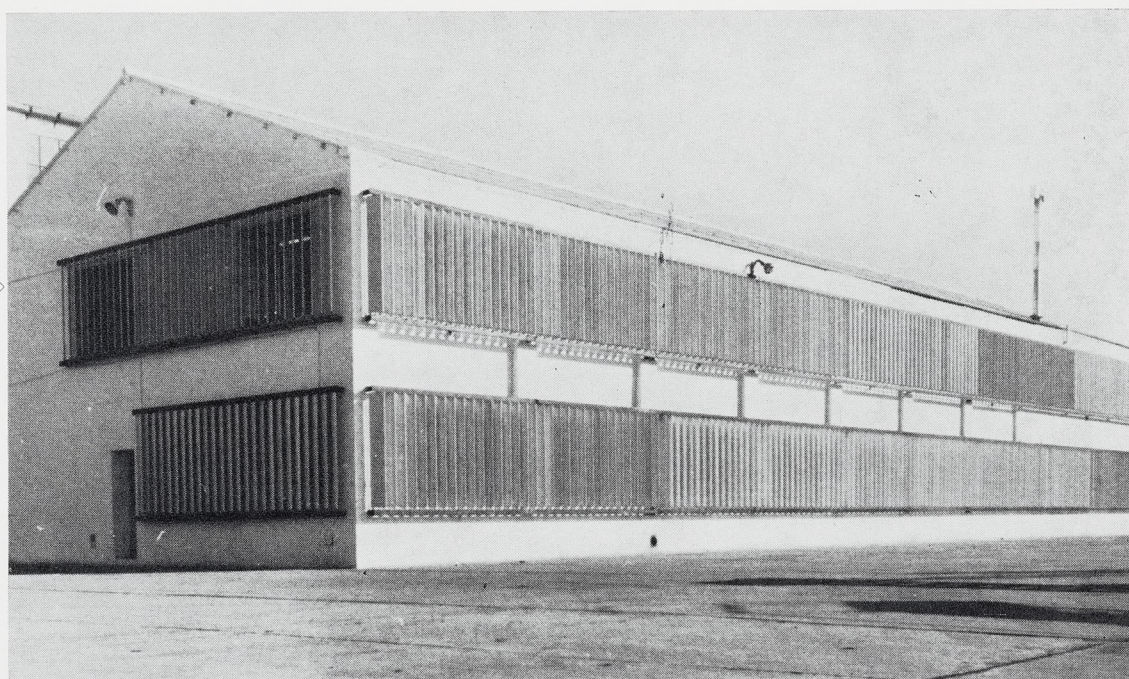


Mr. Peck



**FINAL ASSEMBLY**—This is the final assembly area at Getafe for the Spanish F-5, CASA's version of the F-5/T-38 Norail. In the background are some of the Spanish F-5 A and B

assembly tools. All necessary machinery has been ordered, and facilities for milling and bonding are being expanded, as final steps are taken for the actual manufacture of the F-5.



**NEW OFFICES**—Since the beginning of the Northrop-CASA program, this office building at Getafe has been constructed to house Quality Control, Planning and Engineering Design. The

building is one of many new or expanded facilities, acquired exclusively for the F-5 program. Contracts call for the manufacture of 36 F-5A single seat and 34 F-5B two-seat jet fighters.

## Jackson Attends Hayden Dinner

Roy P. Jackson, vice president and assistant general manager of Northrop's Norair Division, was an official host at a recent dinner honoring Arizona Senator Carl T. Hayden.

Mr. Hayden has represented Arizona in Congress since 1912.



**WORK IN SEVILLE**—Leon Garcia (left), CASA's chief tool engineer, and Albert Rodriguez, Norair Technical Assistance Team tool engineer, review the layout of the final assembly line at Seville. CASA has already completed several thousand tools, in preparation for the manufacture—under license to Northrop—of F-5's for the Spanish Air Force. Facilities have been established in Seville and in Getafe, near Madrid.



**SECURITY OFFICERS** from major Northrop divisions, subsidiaries and offices gathered in Hawthorne for planning and discussion of security matters and a facilities tour. Frank Richardson (seated) was chairman. Seated (from left) are Elaine Spencer (Hallicrafters), Sandra Allen

(Corporate office) and Juanita Christiansen (Eastern Regional Office). Standing (left to right) are Eiven Sunde (Page), Chuck Simmers (Ventura), Dean Haddon (NARD), Gene Jes-sick (Nortronics), Robert Keller (Nortronics) and William Woods (Carolina).



Classified

Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private businesses are not accepted. The Northrop News reserves the right to edit or omit ads. Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 62. Ads are limited to one item and one ad per person each issue. Deadline is noon Wednesday, one week before publication.

For Sale	
Yamaha, 1964, 80 cc, extras, \$200. Hawthorne, 679-4237.	A
Guitar, Fender Mustang, elec., & amplifier, never used, \$285. Compton, 635-2648.	A
Rug, beige, 10½' x 11' w/pad, \$15. P.V. Pen., FR 7-4317.	A
T-Bird, 1965, full power, air cond., new tires, \$2,650. Inglewood, OR 2-3081.	A
Bicycle, Schwinn, 20", girl's, \$10. Torrance, FA 8-3306.	A
MG, 1958, Magnette, 4-dr., needs engine, brakes, \$25. Box 1101.	A
Chevrolet, 1961, 4-dr, Biscayne, \$700. Lomita, 635-2333.	A
House, 3-bdrm., walking distance to Norair, d/washer, natural cabinets, lge. covered patio, plus terrace, detached utility rm. w/½ bath, block walls, tropical landscaping, fruit trees, sell furnished, \$1,000 dn., \$25,500. Hawthorne, 676-8842.	A
Wig, blond, worn 4 times, blunt cut, \$90. Manhattan Bch., 545-2431.	A
Luggage Carrier, for Volkswagen, canvas tarp, suction cups & clamps, \$20. Inglewood, 674-5953.	A
Sailboat, 15', fiberglass, Columbia 15, complete w/sails, cover & extras, \$800. Garden Grove, 714-531-5391.	A
Oldsmobile, 1962, Dynamic 88, 9-pass. wagon, p/s, p/b, factory air, \$900. Inglewood, 672-3155.	A
Refrigerator, Admiral, dual-temp, 10 yrs. old, \$50. Gardena, DA 9-9982.	A
Pickup, 1965 Ford Ranchero, \$250 & assume bal. of \$1,100. Newbury Pk., 889-0588.	A
Bed, Roll-A-Way, ¾ size, \$10. Torrance, 326-9107.	A
Top Rack, for station wagon, 42" w. x 90" l., tailored weather-proof bag 14" high, cost \$185; \$65. Saugus, 805-252-2468.	A
Honda 305, Superhawk, new eng. & trans., metal flake & custom seat, \$500. Inglewood, 676-8893.	A
Dodge, station wagon, 1962, Seneca, r/h, stick shift, \$290. P.V. Pen., 377-2064.	A
Sailboat, 17', Centerboard, sails incl., recently painted, \$775. Hermosa Bch., 372-5539.	A
Vacation Trailer, 18' Jewel, 1957 model, sleeps 4-6, \$550. Hawthorne, 675-4924.	A
Ducati, 1965, 250 cc. Scrambler, approx. 1,500 miles, extras, \$400. Hawthorne, OS 6-9736 before 4 p.m.	A
Trailer, 1952, 15' Terry Rambler, elec. brakes & 4-burner apt. size butane stove w/broiler & oven control, sleeps 5, \$450. Torrance, 325-0305.	A
Surfboard, 9' 10" Dewey Weber, med.-sized surf jacket, car rack holds up to 4 boards, \$95. Inglewood, PL 5-6830.	A
Picnic Table, redwood, 2 benches, 6' 10" long, \$15. Torrance, 326-5663.	A
Buick Engine, 1959, bored to 388 cu. in., balanced, forged pistons, moly rings, completely rebilt., never run, cost over \$450; \$275. Torrance, DA 6-8273.	A
Sloop, Omega, 14', fiberglass, #314 by Wesco, never stored o/doors, fully equipped, tilt trailer & all racing extras, \$795. P.V. Ests., 375-7168.	A
Motorcycle, 1964 Tohatsu, 50 cc., extra parts, \$150. Hawthorne, FR 9-8248.	A
Ford, 1961 station wagon, 8-cyl., 9-pass. Country sedan, r/h, p/s, needs rings, \$450. P.V. Pen., FR 7-4943.	A
Pickup, 1957 Chevrolet, ½-ton, r/h, new seat covers, Hydro., \$495. Hawthorne, OS 6-5219.	A
TV, Westinghouse, 23", 6 yrs. old, new picture tube, console, \$40. Lawndale, 370-4258.	A
Refrigerator, Servel, gas w/auto. ice maker, 9 cu. ft., \$20. Inglewood, 759-8920.	A
Deep Freeze, 8' dble. door console & lawnmower, Craftsman, power, \$100. Hawthorne, OS 5-1860.	A
Lot, Salton Sea, centrally located, \$3,475. Hawthorne, 676-3028.	A
Surfboard, 9' 6" 22" wide, fiberglass, w/solid balsa strip, w/racks, \$95. Lawndale, 370-1963.	A
House, 4-bdrm., family rm., 1¾ bath, landscaped, \$3,250 dn., \$32,500. Torrance, 379-9114.	A
Table, mosaic tile, 45" dia., retail \$80; \$59. Torrance, DA 5-6022.	A
House, 3-bdrm., 2 baths, family rm., 2-car gar., 18' x 35' heated pool, bltin range & oven, d/washer, cpts., dps., air cond., \$32,500. Gardena, 327-1131.	A
Scooter, Allstate, compact, \$90. Inglewood, 672-3147.	A
Wiglet, brown, never worn, real hair, \$15. Torrance, DA 5-5245.	A
Cradle, Colonial maple, w/mattress, \$25. Torrance, 375-4593.	A

For Sale	
House, 3-bdrm., 2 bath, Hollypark, fireplace, bltin range & oven, cpts., dps., patio & enc. rear yard, 4½% G.I. loan can be assumed, \$26,950. Gardena, DA 9-2393.	A
Poker Table, chip rack & drink sections, center playing area covered w/wool felt, tubular enamel legs w/strong positive locking hardware, folds for easy storage, \$25. Inglewood, 671-7292, OS 6-6390.	A
T-Body, fiberglass, new, \$90. Inglewood, PL 6-4424.	A
Wedding Dress, traditional princess style Kayhill Gown, white silk taffeta w/train & applique around neckline, 3 petticoats attached, size 8, \$50. Rolling Hills, 831-9707.	A
Ford, 1957, 2-dr. sedan, \$295. Manhattan Bch., 545-2742.	A
Range, Chambers, deep well, top broiler, retaining heat, orig. \$500; \$85. Hawthorne, OS 9-8620.	A
Washer, Whirlpool automatic, \$25. Torrance, 370-6896.	A
Dinette Set, brown metal w/4 chairs, \$20. Anaheim, 714-635-1686.	A
Golf Clubs, Pro-Line, 4 McGregor woods, D-3, \$40. Long Bch, 425-2417.	A
Home, 4-bdrm., 2 baths, 1,700 sq. ft., 17 x 27 fam. rm. kitchen comb. w/bltins, service porch, 220 wiring, cpts., dps., less than 5 mins. to Norair, \$1,200 dn. to FHA, \$25,000. Hawthorne, 679-2307.	A
Razor, Sunbeam elec., w/trimmer edge, carrying case, never used, \$17.50. L.A., PL 4-0817.	A
Tires, 25,000 actual miles on custom rebilt. engine, \$200. Manhattan Bch., FR 2-4324.	A
Mustang, 1966 convt., 289 V-8 auto., p/s, p/top, r/h, w/w, other extras, still in warranty, \$2,175. Manhattan Bch., 379-3487.	A
Refrigerator, Midget, 110 volts a.c., approx. 20" x 23" x 18½", freezer compartment, auto. temp. control 2 mos. old, \$45. Manhattan Bch., FR 2-1445.	A
House, 4-bdrm., 1¾ bath, cpts., dps., sprinklers, 2 patio areas, 6 yrs. old, near schools & shopping, \$37,500. P.V., 377-5414.	A
Volkswagen, 1966 1300 sedan, 11,000 miles, 1-owner, \$1,580. Venice, 396-6776.	A
Dishes, 51-piece hand-decorated Weil Ware, \$20. Hawthorne, 675-8360.	A
Surfboard, Dewey Weber, 10', orig. price \$160; \$85. Westchester, 645-1075.	A
Poodle, silver gray, 5 yrs. old, good w/children, AKC reg., \$35. Compton, 631-9254.	A
Day Cruiser, 17' Tollycraft, 55 h.p. Mark Mercury o/board motor, trailer, 20 hrs. on o/hauled eng., hull repainted, \$800. Inglewood, 676-6907.	A
Pontiac, 1965 Tempest, auto. trans., p/s, \$1,690. P.V., 377-5172.	A
Hide-A-Bed, 7', Naugahyde, \$50. L.A., 870-7894.	A
Impala, 1966, V-8, auto., deluxe radio, low mileage, take over \$89.97 mo. pymts., \$2,200 approx. balance. Gardena, 679-3927.	A
Bedroom Set, 2 twin beds, 2 bookshelf headboards, 2 dresser sets, complete, \$40. Torrance, 328-6863.	A
Chevrolet, 1964 Malibu 2-dr. coupe, 4-spd., p/s, p/b, r/h, \$400 equity & take over \$72 mo. pymts., \$900 balance. L.A., 754-6546.	A
Pickup, Chevrolet, ½-ton, 8' bed, std. shift, pipe/lumber rack, new clutch & carburetor, \$700. Norco, 735-5964.	A
Drum Set, has snare, bass, 1st & 2nd tomtoms, 3 cymbals, many extras, \$150. Anaheim, 714-774-3815.	A
Home, 3-bdrm., 2,000 sq. ft. living space, family rm., 2 baths, fireplace, 2-car gar., cpts., dps., sep. storage area, d/washer, old Spanish style, ocean view, \$31,500. Ventura, 805-643-9413.	A
Impala, 1962 sport coupe, Power Glide, p/s, r/h, \$700. Torrance, DA 9-5459.	A
Refrigerator-Freezer, Frigidaire, 2-dr., 16 cu. ft., frost-free, \$100. P.V. Pen., 377-6352.	A
Home, 4-bdrm., 2 baths, swim pool, 10 minutes from Norair, \$25,900. Torrance, 370-1472.	A
Chevrolet, 1961, 2-dr. h/top, 283 cu. in., 41,000 miles, slicks, stick shift, \$800. Inglewood, 677-7515.	A
Volkswagen, 1963, bus, big engine, \$1,050. Compton, 638-5610.	A
Arc Welder, light duty, Weldmatic model SA-50, helmet, \$20. P.V. Pen., 377-3806.	A
Sentinel System, skydiver's, actuates at 1,400 ft., \$30. Simi, 805-526-7642.	A
House, 2-bdrm., presently rented for \$130 mo., \$20,000. Torrance, 372-0129.	A
Volkswagen bumpers, complete w/bumper guards, \$16 ea. Huntington Bch., 897-8201.	A
Bicycle, girl's 26" J. C. Higgins, \$15. Hawthorne, 675-3098.	A
Boat, 14', 10 h.p. motor & trailer, \$250. Gardena, DA 4-7637.	A
Home, 3-bdrm., lge. den, 1½ bath, near Palos Verdes, \$27,950. Hawthorne, OS 5-4393.	A
Pontiac, 1959 Catalina h/top, auto., p/s, p/b, 4-dr., r/h, \$385. Maywood, LU 2-1079.	A
Wig, 100% human hair, black, worn 3 times, orig. cost \$100; \$50. Torrance, 325-4298.	A
Pickup, 1965 Chevrolet, 8' bed, new tires, r/h, std. shift, split rear rims, 23,000 actual miles, \$1,500. Gardena, DA 4-7623.	A
Lotus Elite, 1963 GT, V.F. trans., many extras, \$3,350. Santa Monica, 545-1294.	A
Camper, all alum., cab high, shell, fits Chev., Ford or Dodge, w/8' bed, fleetside style, \$150. Redondo Bch., 370-9626.	A
Motorcycle, Suzuki, 150 S32-2, 1966, \$325. P.V., 378-1561.	A

For Sale	
Sailboat, Cal 24, completely equipped, sleeps 4, \$4,750. Redondo Bch., 832-8391, 372-7295.	A
Boat, 14' runabout, Mercury Mark 30 motor w/trailer, \$380. Inglewood, OR 1-8672.	A
Home, 1,700 sq. ft., 4-bdrm. & fam. rm., 2 baths, fireplace, 115' x 74' corner lot, cpts., low down w/FHA, \$23,950. La Mirada, 697-6784.	A
Falcon, 1961, 4-dr. deluxe, r/h, needs some body & engine work, \$225. Gardena, 324-3410.	A
Mattress, box springs, twin size, & frame, \$30. Redondo Bch., 375-2220.	A
Wig, blonde, good quality, worn once, cost \$90; \$33. Marina Del Rey, 823-2655.	A
Autoharp, near new, \$35. L.A., OR-0-6896.	A
Home, 4 lge. bdrms., 2 baths, family rm., 2-story, corner lot, cpts., dps., fireplace, fences, patios, sprinklers, 3-car gar., \$31,500. La Palma, 714-827-1958.	A
Chevy II, 1964 Nova, 6,000 actual miles, h/top, all extras, \$1,300. Inglewood, 757-1038.	A
Flying Club Membership, 1964 Cessna 172, based Orange County Airport, dual omnis, 3 light markers, many extras, \$200. Anaheim, 714-630-2453.	A
Bridal Gown, empire fitted sheath, bell sleeves, train, veil, size 10, alterations incl., cost \$130; \$50. Garden Grove, 714-539-3925.	A
House, 2-bdrm. & den, 1¾ baths, bltins, lge. encl. yard w/patio, terms, \$20,500. Garden Grove, 375-8778.	A
Buick, 1965 Riviera, all power, air cond., \$3,000. Torrance, 378-8825.	A
House, 3-bdrm., lge. den w/fireplace, \$27,950. Hollypark, 754-2286.	A
Monza, 1961, many extras, 1-owner, \$800. Inglewood, 671-3588.	A
Surfboard, 8' 10", redwood stringer, laminated tailblock, \$58. Torrance, FA 8-0460.	A
Sloop, 32' 7/8 rig, fiberglass construction, stainless rigging, sleeps 6, head, 135 watt marine radio, RDF, 3 mains, 2 jibs, 2 genoas, spinnaker, desire partner(s) or will sell outright, \$11,950. Box 1102.	A
Home, 2-bdrm., h/wood floors, new furnace & hot water tank, fruit trees, 2-car gar., patio, 2 miles from Northrop, \$19,000. Inglewood, OR 2-8981.	A
Chair, Bell, dble. size, reclines or makes into bed, storage compartment on each side, ottoman incl., \$75. Box 1103.	A
Camera, Polaroid, case, color & flash attachment, extras, \$50. Lomita, 326-3135.	A
Station Wagon, 1960 Mercury, p/s, r/h, 430 cu. in. eng., \$500. Inglewood, 679-3735.	A
Crib, & mattress, playpen, feeding table, wonder horse, other misc. baby items, \$40. Gardena, FA 1-1655.	A
Rug, beige, 13x21 w/pad, \$40. Torrance, 327-6918.	A
Baby Equipment; stroller, bathinet, car bed, space heater, padded car seat, infant seat, high chair, sterilizer, buggy mattress & play chair, \$2 to \$11. L.A., 645-4216.	A
Acreage, 20 acres southeast of Mojave, access by good road, \$2,000 dn. & bal. w/6% interest, \$600 acre. Torrance, FR 8-1026.	A
Condominium Apt, 4 bdrm., 2½ baths, cpts., dps., close to grade schools, ¾ miles to North High, 2-car gar., lge. swim. pool, \$28,950. Torrance, 327-3160.	A
Washer-Dryer Combination, Lady Kenmore, \$100. San Pedro, 830-7580.	A
Interior Plaster, 100 lb. sacks, green, pink, cream, & exterior stucco, 100 lb. sacks, pink, green, \$2 sack. Hawthorne, 675-9389.	A
T-Bird, 1956, mags, stereo, extras, \$1,495. Gardena, 329-0193.	A
Surfboard, Roberts, 9' 1", \$50. Westchester, 670-0472.	A
Units, 11, Spanish-style, 5 1-bdrm., furn.; 5 2-bdrm., furn.; 1 5-bdrm., 2½ baths, sep. house has bar & den, 75'x200' lot, \$20,400 income, 60-70% loan, 15-20% dn., owner carries 2nd., \$148,000. Hollywood, HO 4-1084.	A
Dodge, 1965 Dart 4-dr. sedan, \$1,500. P.V. Pen., 377-3400.	A
Wanted to Buy	
Radial Arm Saw, reasonable. Box 1104.	B
Tandem Bicycle. Eastview, TE 2-1684.	B
Edger-Trimmer, used, at least 2 h.p. 4-cycle engine. No. Hollywood, 766-8290.	B
Tool, & instruments, specialized automotive, may be hand, pneumatic or electric. Whit-tier, OX 3-4117.	B
Camera, 8mm w/zoom lens & automatic controls, not Super 8. Hawthorne, 679-6982.	B
Vacuum Cleaners, 2 sturdy, used. Inglewood, 671-0835.	B
Player Piano, in good condition. Los Alamitos, 430-2958.	B
Bicycle, girl's, 20" wheels. Torrance, 370-3752.	B
Coins, Indian pennies 12¢ ea., 1950 nickles 14¢ ea., 1916 to 1930 fine or better Mercury dimes, 30¢ ea. & up. Torrance, DA 6-5558.	B
Free (To Be Given Away)	
Kittens, 5. Manhattan Bch., 379-8364.	D
Screen Doors, 2, used, sizes approx. 76x32 & 81x42. So. Gate, LO 6-4306.	D
Rentals Offered	
Apt, deluxe, 2-bdrm., furn., lge. pool & patio, closed gar., near El Camino, adults, \$150. Torrance, DA 9-5986.	E
Cabin, Green Valley Lake, \$55 wk. Torrance, 320-2002.	E

Rentals Offered	
Vacation Cabins, Lake Gregory & Crestline, make reservations early for June through Sept., \$25 w/ends; \$60 wk. Venice, EX 1-2040.	E
Vacation Apt, Catalina Island, cooking facilities, bicycles, walking distance to beach, 2 adults, \$60 wk.; 2 adults & 2 children, \$75 wk. Gardena, 323-7470.	E
Apt, 1-bdrm., furn., near Northrop, lge. rooms, \$95. Hawthorne, OS 6-4734.	E
Townhouse, 4-bdrm., 2½ baths, pvt. patio, 2-car gar., all elec. kitchen, inc. use of clubhouse, pool, play area, cpts., dps., \$225 mo. Garden Grove, 714-530-4221.	E
Apt, deluxe, 1-bdrm., pool, \$95 mo. Redondo Bch., 376-2117.	E
Widow will share home w/single working girl, own room, kitchen privileges, no pets, prefer personal references, 10 min. from Johnson Bldg., \$10 wk. Box 1105.	E
Exec. Apt, 2-bdrm., 2 baths, 1,500 sq. ft., lux. features, \$210 mo. Inglewood, 670-6084.	E
House, 2-bdrm., unfurn., lge. fenced yard, Inglewood, \$165 mo. L.A., AX 2-9489.	E
Apt, unfurn., lge. 1-bdrm., close to Northrop, cpts., dps., bltins., adults only, \$95. Lawndale, OS 6-5425.	E
Apt, 2-bdrm., furn., avail. June 20, \$175 mo. Manhattan Bch., 545-2742.	E
Apt., 1-bdrm., modern, bltin stove & ref., air cond., cpts., dps., 20 mins. to Norair, \$97.50. Mar Vista, 391-7781.	E
Mountain Home, Lake Arrowhead, 3-bdrm., 2 baths, lake view, \$150 wk.; \$75 w/end. P.V. Pen., 377-5936.	E
Apt., 1 & 2 bdrm., furn. & unfurn., elec. bltins, adults only, close to Northrop, \$110 & up. Torrance, 327-1893.	E
Cottage, Ocean Beach, San Diego, make reservations now, \$30 w/end; \$65 wk. Buena Pk., 714-826-2007.	E
Apt., 1-bdrm., furn., cpts., dps., bltins, ceramic tile, gar., utilities paid, adults only, no pets, 5 min. to Northrop, \$145 mo. Redondo Bch., 376-3505.	E
Apt., 1-bdrm unfurn., & furn. single, closed gar., near park & transportation, \$95 mo. Torrance, FR 5-0867, 320-2050.	E
Apt., 1-bdrm., unfurn., laundry room, gar., near transportation, patio, adults only, \$85 mo. Gardena, DA 9-9195.	E
Apt., 2-bdrm., cpts., dps., room for washer & dryer, \$125. Inglewood, 673-3427.	E
Apt., furn., 2-bdrm., 2 baths, gar., laundry, near schools, \$155 mo. Inglewood, 644-2565, 672-1890.	E
Cabin, Big Bear Lake, sleeps 7 to 9, \$18 w/end; \$50 wk. Bellflower, TO 7-0662.	E
Vacation Cabins, Idyllwild, 1 & 2 bdrms., fireplace, stream, patios, \$20 to \$35 w/end; \$45 to \$75 wk. L.A., PL 4-5288.	E
Garage, 3 blocks from King Harbor, for boat storage or other things, \$15 mo. Redondo Bch., TE 3-9862.	E
Child Care Wanted	
Woman to care for 2 pre-school children, ages 3 & 4, from 7:10 a.m. to 4:20 p.m. daily. Willing to sit in my home. Gardena, 324-2784.	H
Babysitter, my home, own transportation, 2 children, 4 & 6 yrs., light housekeeping. Gardena, 323-8165.	H
Child Care, my home, must have own transportation, 1 child, 3 yrs. old. Lawndale, 371-3029.	H
Woman, to care for 2 children, my home, ages 2 & 4½ yrs., own transportation, from 6 a.m. to 3:30 p.m. Westminster, 897-2161.	H
Personals	
To all my friends at Northrop, I want to thank you for your friendship, help & understanding during the past 14½ years. E. G. FINCH.	L
We wish to inform our many friends at Northrop Nortronics that my husband, George, sr., & I observed our Golden Wedding Anniversary on June 5. We were married at Mason City, Iowa, June 5, 1917. We have 4 children, 18 grandchildren & 17 great-grandchildren. Also thank you very much for sending us the News. AUDREE M. DUMSER, ret.	L

Rides and Riders	
Rides Wanted	
7:30 a.m. — 4:15 p.m.	
Marine & Highland, Manhattan Beach. L. Berg, Norair, ext. 2763, 545-1662.	
8 a.m. — 4:45 p.m.	
Valley View & Lampson, Garden Grove. T. A. Duteau, Norair, ext. 2230, 714-897-9815.	
Ventura Blvd. & Platt Ave., Woodland Hills. W. J. Palmer, Norair, ext. 1074, 347-5940.	
Erbes Rd. & Thousand Oaks Blvd., Thousand Oaks. Four-man carpool—need 3 more. Hugh M. Cameron, Norair, ext. 1518, 805-495-9984.	
Rides Offered	
8 a.m. — 4:45 p.m.	
Valley View & Lampson, Garden Grove. T. A. Duteau, Norair, ext. 2230, 714-897-9815.	
Ventura Blvd. & Platt Ave., Woodland Hills. W. J. Palmer, Norair, ext. 1074, 347-5940.	
Erbes Rd. & Thousand Oaks Blvd., Thousand Oaks. Four-man carpool—need 3 more. Hugh M. Cameron, Norair, ext. 1518, 805-495-9984.	L
Personals	
Wanted: People interested in joining a non-investing time stock market club. Object: Improvement of investing techniques. Group subscription to advisory services. P.V., 541-1625.	
For Sale or Trade	
Automobile Cooler, 6 volt, \$25 or trade for 12 volt auto cooler. San Pedro, TE 3-2512. M	
Sailboat, Cal-24, galley, big ice box, new stainless stl. rig & bottom paint, 5 bags of sails, sleeps 4 adults, \$5,200 or trade for F/G 32-35' sailboat. Marina Del Rey, EX 8-5019.	M

Violations Result in Warning

Continued irregularities involving private vehicles driven or parked in-plant at Northrop Norair have prompted words of caution from the Traffic and Parking Operating committee through Chairman Paul Crews.

“Employees can help correct these irregularities now where as time goes by we will be forced to issue citations for violations of regulations,” Mr. Crews said.

Private vehicles parked along roadways adjacent to buildings in no parking zones and other restricted areas are of major concern now.

Drivers with “Z” decals are reminded they authorize driving in-plant only and are not parking permits.

Conversely, lettered and numbered decals authorize parking in specified areas only, not in-plant driving.

Drivers are being asked to observe all parking regulations, curtail in-plant driving of private vehicles and to use access gates nearest assigned in-plant parking lots at all times.



VETERANS OF SAFETY—Lee B. Johnson (right), Norair chief safety engineer, receives a plaque from T. D. Lynn Masters, general chairman of the Los Angeles chapter of the Veterans of Safety. The presentation was made at a luncheon held to honor Mr. Johnson for his long years of service to the group.



# New Vigicon System Nearing Completion

Vigicon project officers at Palos Verdes are completing installation of a command and control display system to become operational by late summer.

The system will add many features to the demonstration center not included in an earlier display system.

"Our idea," said Applications Engineer Chuck Blaney, "is to show the customer what Vigicon can do, as applied to his particular requirements, rather than just tell him about the system."

The new Command and Control Test Bed system, described by Mr. Blaney as "an expansion of demonstrational capabilities," will include computer and computer programming capabilities, teletype inputs, magnetic tape adaptability for data storage, and a CRT (cathode ray tube) display feature.

"The command and control display system will give the customer an operational look at the Vigicon," Mr. Blaney said. "By pre-programming the system, we will enable the customer to see exactly how the system will solve his requirements, in virtually any type of operation."

The physical arrangement of

the Vigicon center will allow for the simulation of many tactical and strategic command and control problems.

Basically, the system will be composed of a Nortronics NDC-1000 Digital Computer, a Nortronics Vigicon Large Screen Display System, a Sanders Model 720 Communicator, a Motorola Line Printer, a Teletype Communications Terminal, an Ampex Digital Tape Transport, an IBM Card Reader and Punch, and an EECO Time Code Generator.

Nortronics' Vigicon customers include the National Aeronautics and Space Administration, the U.S. Air Force and the U.S. Navy.

For NASA, Nortronics has built and installed Vigicon display centers at Edwards Air Force Base, California; the Goddard Space Flight Center, in Maryland; and the Manned Spacecraft Center, in Houston.

For the Air Force, Nortronics has provided two Vigicon systems at Cape Kennedy.

Navy Vigicon installations are at Norfolk, Virginia; Quonset Point, Rhode Island; San Diego; Tokyo; Vallejo; the Bahamas; Pearl Harbor; and Puerto Rico.



PROCUREMENT PERSONNEL assigned to Nortronics' Navigation department who voluntarily took part in after hours training course aimed at new ideas in cutting costs line up to

receive course certificates from R. E. Salrin (right), Navigation department Procurement director. This function is going all-out to reduce costs of materials.

## FROM ICAF

## Officers See C-5 Facilities

Northrop Nortronics' Navigation department was host recently to an unusual group of senior military officers with a special interest in the C-5 Transport Program.

The 10 officers, including representatives of all branches of the military, are currently attending the Industrial College of the Armed Forces (ICAF).

They were accompanied by Colonel Donald E. Eggleston, USAF, a member of the ICAF faculty.

The May 15 visit to Nortronics Hawthorne was a part of a field trip which took them to the prime and associate contractors and to several government agencies involved in the C-5 Program.

Northrop is producing the important inertial-Doppler navigation system for the C-5 which will become the Air Force's largest and fastest transport aircraft.

Ross F. Miller, Nortronics vice

president and Navigation department manager, and Lloyd Balsam, the C-5 Program director, headed program leaders making presentations before the group.

Currently, the ICAF curriculum for these officers involves an intensive study of C-5 program management. In addition to a thorough familiarization with the program, the officers are seeking information involving the total package procurement method of weapon system management. They are attempting to analyze strengths and weaknesses of this method and to identify common and typical problems associated with it.

Prior to departing after a busy full day of discussions, presentations and tours, a representative of the student group presented Mr. Miller with a special plaque expressing appreciation for Northrop's participation in this effort.

## Bus Service Increased at Hawthorne

Interplant bus service at Northrop's Hawthorne facility—from Prairie Avenue on the west to Crenshaw Boulevard on the east—has been increased to every 20 minutes.

The announcement was made by R. M. Cooper, director of Warehousing and Transportation.

The new schedule, in effect immediately, provides for service between 6:40 a.m. and 4:40 p.m.

Turnaround points are the front of the Plant Two lobby, on the west, and the NRC Clubhouse, on the east.

There are 10 stops on the route. They are, from west to east:

Broadway, immediately to the east of the Personnel office; Broadway, at the west side of the cafeteria; the northwest side of the cafeteria; the northeast corner of the Engineering and Science Center; in front of the hospital; Gate 10; the southwest corner of the model shop; the northwest corner of the Environmental Test Lab; the northwest side of the Radar Hangar; and the northeast side of the Radar Hangar.

## Procurement Men Attend Cost Reduction Classes

Key Procurement personnel serving the Northrop Nortronics Navigation department at Hawthorne share a common opinion.

They feel giving a dozen or more of their free hours is inconsequential in view of the fact they have a target in sight, an overwhelming desire to hit it and a chance for self-improvement.

So 25 of them — buyers, cost estimators and analysts, staff members, supervisors and subcontract personnel — voluntarily went "back to school" last month.

They attended a three-week course taught two nights each week at the Hawthorne facility.

Arranged by Nortronics and taught by two members of the UCLA faculty, the course was tailored to their work and the job that lies ahead.

The course, a refresher effort, emphasized cost reduction. It was timely in that Procurement personnel, plus all employees involved in materiel activities, are going all-out in an effort to reduce costs associated with materiel purchases and subsystems scheduled to be used in producing C-5A navigation systems while maintaining current high standards of product quality.

Procurement personnel are in an excellent position to help reduce over-all costs as they negotiate for the purchase of items and systems. By studying each item closely, investigating possible alternate sources and methods and soliciting the sugges-

tions of suppliers, they can help lower product costs.

R. E. Salrin, Procurement director, says:

"To date, we have had some interesting experiences in this effort. They lead us to believe we can play a tremendous part in reducing costs without lowering our high product standards. This is our goal."

Materiel personnel have set themselves a goal, an ambitious one, in this program. They are working up target costs for each purchase. Pending completion of this phase, they are estimating cost savings for each "ship-set" of components and subsystems and working toward realizing them.

Mr. Salrin indicated the success of the initial training class in stimulating interest and providing new concepts and information has paved the way for possible additional classes, with the prospect for expanding the training to other personnel.

Receiving course completion certificates for successfully completing the class were: Tim L. Congelliere, Jay L. Ross, A. A. Anderson, F. R. Cochran, Alex Martinez, Ray Beattie, W. O. Kamrath, D. B. Jenkins, C. D. Waller, J. E. Grimes, W. G. LaTendresse, G. H. Lenahan, O. L. Gumpert, J. Baker, G. C. Graf, R. L. Black, L. W. Puncher, W. R. Mock, E. T. Tripp, D. L. McCormick, R. K. Perkins, Mark Eaton, Hal Thompson, Ken Shulsinger and E. R. Nelson.

## QUALITY ASSURANCE

## Japan Officials at Meeting

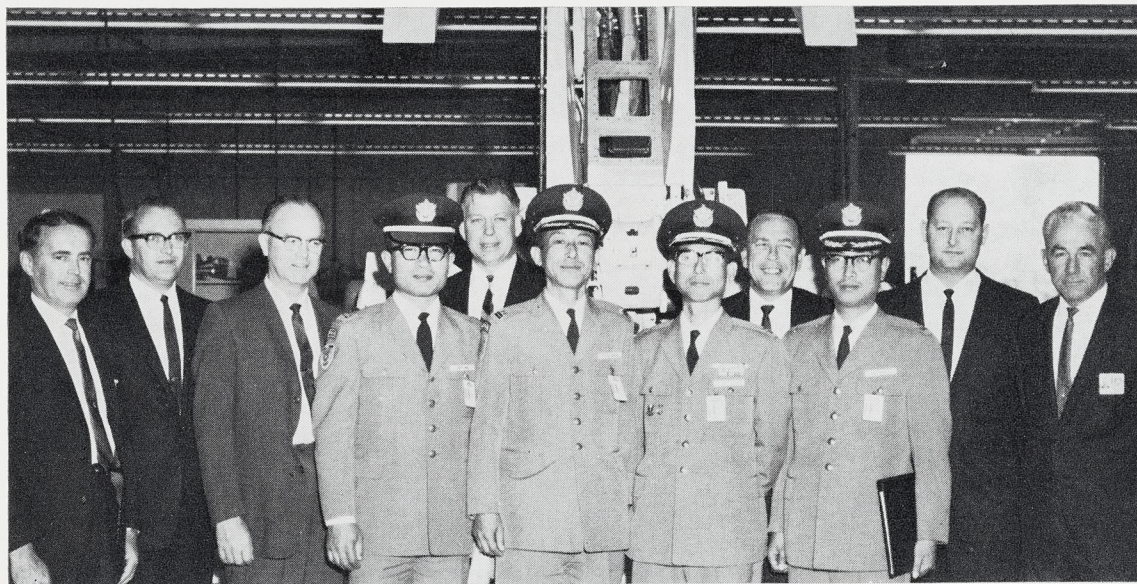
Northrop Nortronics was host for a round of discussions covering Quality Assurance which drew representatives of the Japanese Defense Agency and the U.S. Army Missile Command to Anaheim early last month.

The full day of talks covered discussions of Nortronics' Quality Assurance practices as they interface with governmental Quality Assurance requirements.

Frank McNabb, Nortronics director of Quality Assurance,

and W. A. "Bill" Rothwell, Hawk Programs manager, were co-hosts for the affair.

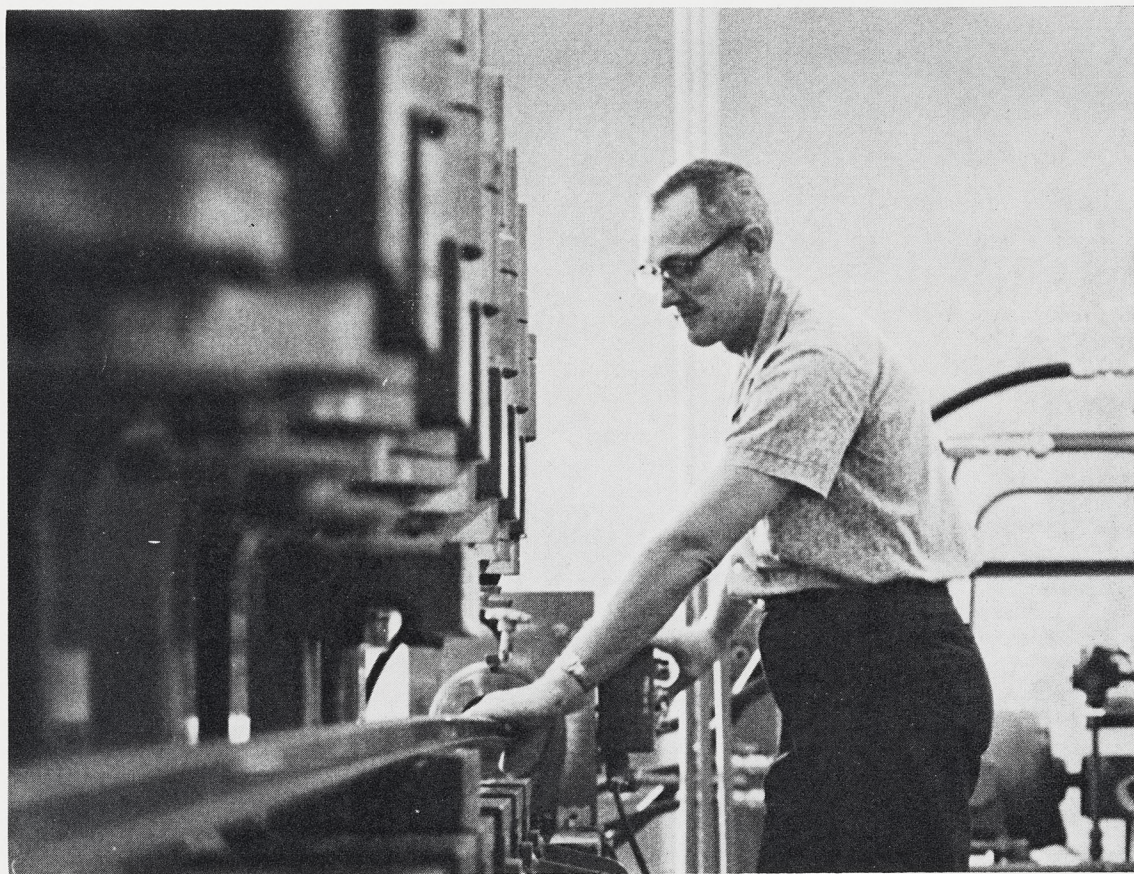
Local representatives of governmental agencies taking part were Art Corden, Nortronics resident representative for the U.S. Army Missile Command, along with Frank Bowman and Herbert Mayers of the Defense Contract Administration Services District—Anaheim Quality Assurance force.



QUALITY ASSURANCE TALKS at Nortronics Anaheim last month drew representatives from the U.S. Army Missile Command and Japanese Defense Agency. Shown during facility tour at Anaheim are (from left) Art Corden,

Bill Rothwell, Daniel Rees, Captain N. Imai, Frank Bowman, Lt. Colonel I. Murata, Lt. Colonel Y. Ariura, Ken Robertson, Major H. Hatta, Herbert Mayers and Frank McNabb.





**NEW NORTRONICS CAPABILITY** — Harry Stubbs of Nortronics Anaheim moves a section of aluminum roll formed "hat" material through another step necessary for turning out stringers for Boeing 747 airliner. Anaheim is establish-

ing entirely new capability for producing aircraft stringers. Initially, production will provide approximately 800 stringers for the 153-foot-long 747 fuselage Norair will build.

## First 747 Stringers Completed at Anaheim

Nortronics Anaheim this month completed its initial shipment of aircraft stringers for the Boeing 747.

The stringers will be used by Northrop Norair in fabricating the 153-foot-long central fuselage section it is designing and building for the 747.

Stringers are basic aircraft structural elements. They run the length of the fuselage, attached on one side to bulkheads, on the other to skins forming the exterior surface. Approximately 800 will be required for each shipset Norair builds. From an end view, the 747 stringers are hat shaped, are about two inches high and approximately two and one-half inches wide. They are from three to 26 feet in length.

Stringers for the 747 are fabricated of aluminum and are being manufactured by Northrop by a new improved forming process developed by the company.

The initial shaping of sheet metal by Nortronics to form stringers is an intricate and demanding task, one involving new techniques and new equipment. At Anaheim a forming machine, developed by Norair Manufacturing Research and Development, will play a key role in this production phase.

Other production routines require interesting machinery, tools and equipment of sizes and complexity new to Anaheim's long production history.

For example, newly formed stringer material progresses

through routines which add single or multiple tapers, simple and compound contours, joggles (indentations) at precise locations and to varying depths, straight and complex cutoffs and cutouts, along with heat treat, cold treat, alodining (coating) and painting operations.

Anaheim is already operating some of the equipment required in this program, with new equipment, tools and supporting facilities still being added.

In time, production of aircraft stringers will take up the entire 65,000 square feet of manufacturing space in Building Y-12.

Frank Lynch, Nortronics vice president and Anaheim manager, said of the program:

"We are establishing a totally new capability, not just a production effort. We will have, in time, a manufacturing capability and capacity in excess of our presently programmed 747 support requirements."

### Independence Day Schedule Announced

Norair, Nortronics and Corporate office personnel assigned to West Coast facilities will observe Tuesday, July 4, as a paid holiday.

Monday, July 3, and Wednesday, July 5, will be regular work days.

The next regularly scheduled holiday for Northrop personnel will be Labor Day, Monday, September 4.

### MR. JONES ANNOUNCES

## Sales, Earnings Increase

Northrop Corporation's consolidated net earnings for the nine months ended April 30 amounted to \$8,407,000, up approximately 21 percent from the \$6,904,000 earned in the first nine months of the last fiscal year, Thomas V. Jones, Northrop president, has announced.

Sales and other income for the first nine months of the current fiscal year were \$337,132,000, up

37 percent from sales of \$245,610,000 reported for the same period a year ago.

Despite a larger number of shares outstanding, per share earnings for nine months were \$1.89, up 14.5 percent from \$1.65 per share a year earlier. Shares outstanding totaled 4,330,444 on April 30, compared with 4,179,343 a year ago. The (See EARNINGS, page 4)

### ELECTRONICS TECHNICIAN

## Jim Anderson—Ability and Dependability

Jim Anderson likes a good challenge.

Since he's a friendly, modest, mild-mannered and entirely unassuming type of man, they have to be creative in nature.

Those who meet Mr. Anderson are quick to accept him for what he is, a top man in his field. They admire his accomplishments, respect his ability and recognize his dependability.

Jim Anderson is an electronics technician. He works in Engineering Development for Northrop Nortronics at Palos Verdes.

He is symbolic of a small group of extremely talented individuals.

Engineering Development fabricates, assembles, checks out, operates and services prototypes, or one-of-a-kind developmental systems on limited production orders.

Each project is composed of costly materials assembled under compressed time schedules with a minimum of drawings or instructions. This requires close cooperation, between the designer and the

craftsman, the customer and the company.

This is where Mr. Anderson finds his challenges.

He has performed every service his job requires. He has worked on navigation systems, optic systems, electro-optical systems and spacecraft. He knows well products with names like Vigicon, SINS, ALOTS, TED and many others.

Mr. Anderson is versatile. He has to be. Electronics is his field, but he is equally adept at mechanical tasks. He operates all types of test and checkout equipment. He can pinpoint and correct problem areas. He works well with people in the shops, engineers and designers, and customers.

"Jim Anderson never lets up, works all the time. He handles himself well, accepts nothing less than perfection in his work. He is popular and highly respected anywhere he goes," says Ross Rogers, Engineering Development superintendent.

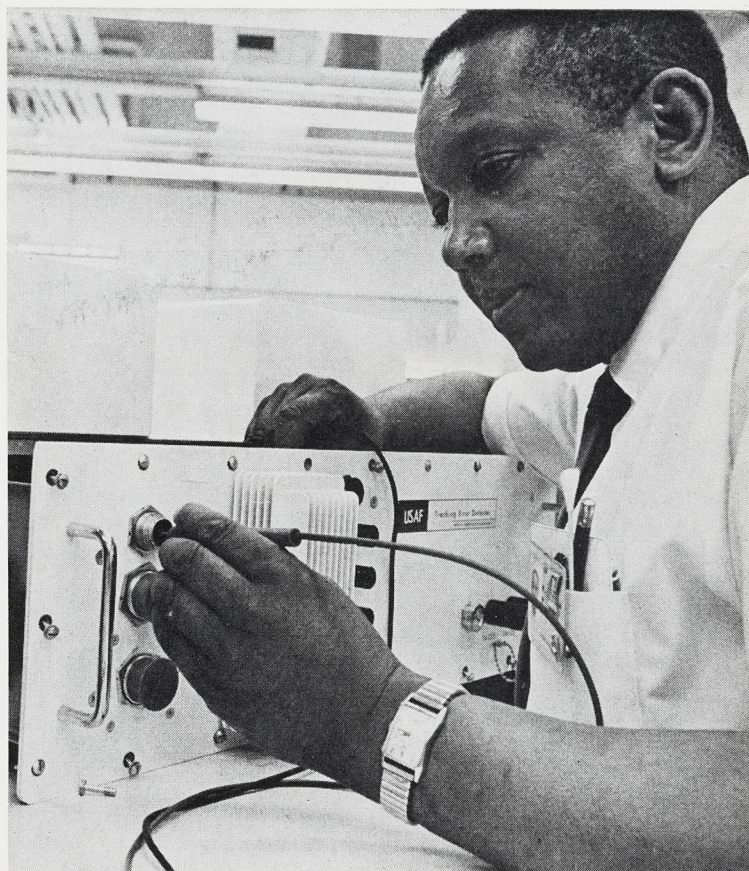
Mr. Rogers recalled dispatching Mr. Anderson to the East Coast to perform work at a customer's facility. He so impressed the customer that he was asked for by name for subsequent tasks. So in a brief period of time he made eight cross-country trips representing Nortronics.

Mr. Anderson, a native of New York, was graduated from the American Radio Institute. He worked for Bell Aircraft in Buffalo before coming to Nortronics six years ago.

He and his wife, Anna Marie, and four children, ages 11 through 17 years, live in Compton.

Mr. Anderson and his family enjoy sports, fishing and the beach.

Mr. Anderson sums up his feelings with: "I have a good job with a good company, doing what I like. It is very gratifying to see a product grow from a drawing to a finished working system. In between are many challenges. I like to face them."



**TOUCH OF A CRAFTSMAN**—Nortronics' Jim Anderson is a topnotch electronic technician assigned to Engineering Development. His talents and skills enable him to fabricate, assemble, checkout and operate many types of systems and subsystems. He is equally at home at Nortronics, a customer's plant or in the field, having carried out assignments in each over the years.





Mr. Larrabee



Mr. Morgan



Mr. Gonzalez



Mr. Watts

### THREE EARN PROMOTIONS

## Mr. Larrabee Tells of Plans To Retire

William Larrabee, Corporate vice president of Industrial Relations, is planning to retire early next year after more than 25 years of service to Northrop Corporation.

In making known his plans to retire from one of the top positions at Northrop, Mr. Larrabee set in motion the machinery that produced a chain of promotions from within the company in a typical demonstration of the purpose and effectiveness of Northrop's Management Resources Program. Mr. Larrabee is responsible for the Management Resources Program.

Alan C. Morgan, who has been Norair vice president of Business Administration, will succeed Mr. Larrabee, Northrop President Thomas V. Jones announced.

"Mr. Larrabee has made many outstanding contributions to the Corporation," Mr. Jones said, "and his retirement will be accompanied by the appreciation and best wishes of all of the people of Northrop," Mr. Jones said.

Mr. Morgan will transfer to the Corporate staff on October 1 and will assume the position of Corporate vice president of Industrial Relations on Mr. Larrabee's retirement.

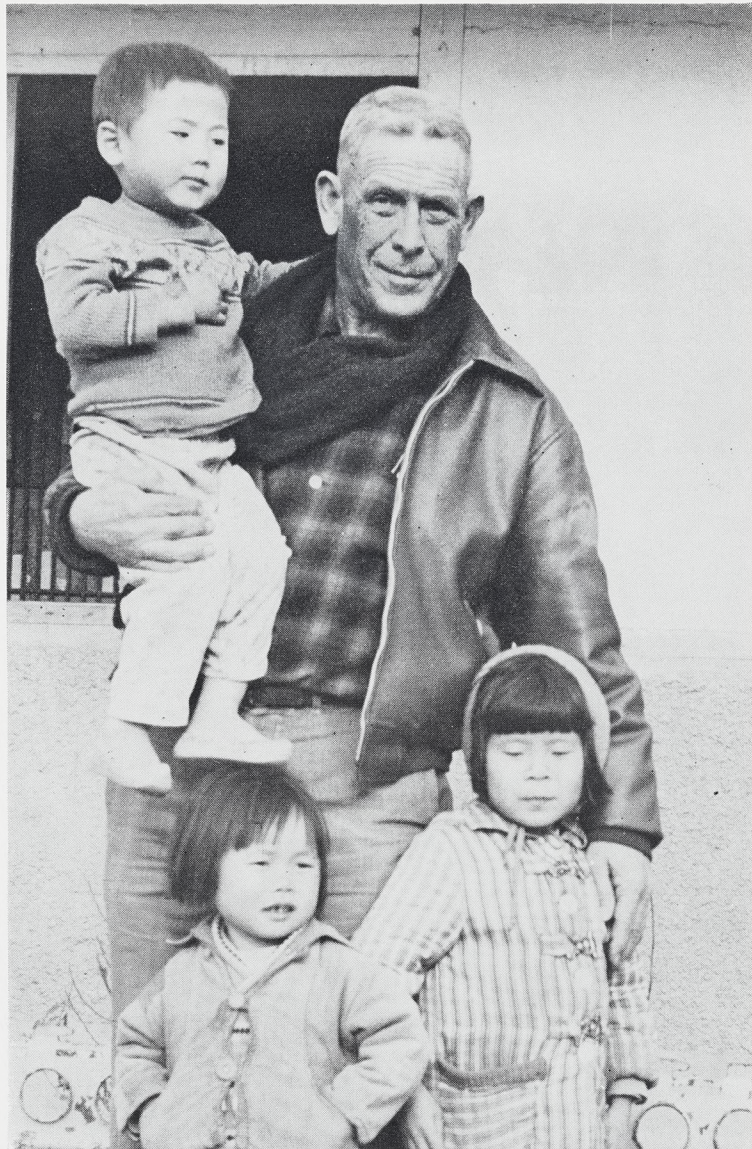
Mr. Morgan has been with Northrop for 27 years, during the last five of which he has directed the Industrial Relations activities at Northrop Space Laboratories and the Norair Division.

In announcing Mr. Morgan's appointment, Mr. Jones said, "His personal integrity and capability in the field of human relations

are recognized throughout our employee body."

Manuel G. Gonzalez, formerly a member of the Corporate legal staff with special responsibilities for international contracts, will become vice president of Contracts and Pricing at Norair on July 1 in a realignment of the functions now assigned to Mr. Morgan as vice president of Business Administration, F. W. Lloyd, Corporate vice president and Norair general manager, announced.

Contract Administration and Estimating and Pricing will be component departments of the newly-designated Contracts and Pricing organization. The Administration department, which is managed by Thomas L. McCarthy, will report directly to Mr. (See PROMOTIONS, page 3)



**HELPING HAND**—Lloyd Wetzel of Northrop Ventura stands with three of the orphans in front of the building he helped construct for them, using discarded packing crates and other surplus items. Mr. Wetzel has been a Northrop employee since 1951.

## Rebuilding an Orphanage; A New Use for Old Crates

More than 5,000 miles separate Northrop Ventura from a tiny orphanage near Osan Air Base, Korea.

But Lloyd Wetzel, a Northrop employee since 1951, has done much to close the gap.

### Five Months

Mr. Wetzel spent five months at Osan—from August through December last year—as a crew chief in support of Ventura's AQM-38 (RP-76) target drone program. While there, he helped ease the orphanage's critical overcrowding by constructing a large dormitory for the children, using discarded packing crates and other surplus items as building materials.

The orphanage is three miles from Osan Air Base, which is 40 miles south of Seoul, Korea's capital.

### The 6314th

Mr. Wetzel was introduced to the problems of the orphanage by friends assigned to the 6314th Consolidated Aircraft Maintenance Squadron, based at Osan.

"The squadron supports the orphanage with time and donations," Mr. Wetzel said. "We used packing crates and other discarded lumber for the building, but many additional materials are donated from time to time by the men of the 6314th."

### Cold Winters

The 88 children—47 boys and 41 girls—have also received warm clothing for the long, cold Korean winter, from military and civilian personnel attached to the base.

"The men don't regard this as any big philanthropic project," Mr. Wetzel said. "It was obvious

that these children needed some help, and we were just trying to do what was needed, in order to help them."

Mr. Wetzel worked at Norair from 1951 to 1962, and then transferred to Ventura. At present, after spending several months at Okinawa and Taiwan, preparations are once more being made for return to Korea. These preparations are being made at Itazuke Air Base, Japan, where Mr. Wetzel is a crew chief of summer maintenance on the F-89, used to launch the AQM-38 drone.

Working with young people is nothing new for Mr. Wetzel. He has been active in Boy Scout work for many years.

## Savings Office Seeks Former Employees

Most people are easy to find when you owe them money, but Corporate Savings personnel are having difficulty in locating 11 former Norair employees who left the company without claiming Hourly Savings Plan checks owed to them.

Mrs. Charlotte Gould, of the Savings office, said checks have been mailed to the last known addresses of the men, only to be returned, unclaimed.

Missing are Calvin Davis, Charles W. Edwards, Eugene G. Everett, Charles W. Forte, O'Neal Gibbs, Gentry M. Hawk, Brayton H. Shortell, Michael A. Smith, John H. Thomas, Ronald R. Goodwin and Charles R. Ferrell. Anyone who may know how to contact them has been asked to call Mrs. Gould on Beverly Hills ext. 303 or 304.



**KOREAN ORPHANS**—These are some of the 88 orphans near Osan Air Base, Korea, who were aided last year by Northrop Ventura's

Lloyd Wetzel. The 47 boys and 41 girls range in age from infants to teenagers. Osan is 40 miles south of Seoul, Korea's capital city.



**GRAY SKIES**—Cold Korean winters are less of a problem for the children of this orphanage, thanks to Mr. Wetzel and the men of the 6314th Consolidated Aircraft Maintenance

Squadron. Many of the facilities at the orphanage have been repaired and rebuilt by the men. The fence at right was fashioned from a discarded temporary landing strip.



# Classified

Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private businesses are not accepted. The Northrop News reserves the right to edit or omit ads. Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 62. Ads are limited to one item and one ad per person each issue. Deadline is noon Wednesday, one week before publication.

## For Sale

**Box Mirror**, maple finish, \$10. Torrance, 370-6896. A

**Yamaha**, 80cc Trailmaster, 1964, 1,500 miles, big knobby on rear, \$175. Fullerton, 714-525-9633. A

**Honda**, S-90, 1966, 5,000 miles, \$250. Torrance, 375-6634. A

**Triumph**, 1966, 500cc, Tiger, custom tank & seat, \$825. Fullerton, 714-525-2498. A

**Valiant**, 1962, 2-dr., b/seats, auto., r/h, \$600. Hawthorne, 679-4340. A

**Tool Chest**, Craftsman, 2-dwr., lift out tray, locks, 6 mos. old, \$20. Anaheim, 714-774-6012. A

**Station Wagon**, 1960 Rambler, 6-cyl., stick shift, 50,000 miles, \$395. Fullerton, 714-525-7685. A

**Bicycle**, 36" Schwinn, 1-spd., \$30. Rolling Hills Ests., 325-5875. A

**House**, 3-bdrm., 1 1/4 bath, air cond., cpts., dps., \$26,700. Orange, 637-8245. A

**Slip Lot**, Salton Sea, boat dock on channel & lot for house, water, sewer, streets & elec. incl., \$7,100. Anaheim, 535-1694. A

**Jeep**, 4-whl. drive, Nissan Patrol, 1963, 6-pass., Warn. lock hubs, new sand tires, top & uphol., \$1,500. Box 1201. A

**Bed**, dble., white headboard, frame, bedspread, all linens, \$70. Anaheim, 714-635-1686. A

**Tools**, complete set of oil & set of precision, tool box, 18" Kennedy w/toolholders & handbooks, \$350. Compton, 631-2708. A

**Oil**, 10 qts. Pennzoil, 30 wt. & 3 qts. Royal Triton, 10-30 wt., 25¢ qt. Tarzana, 345-6391. A

**Shaver**, Remington Roll-A-Matic 25, elec., power scalp massage & brush, \$15.95. Hawthorne, 644-4039. A

**House**, 3-bdrm., lge. den w/fireplace, \$27,950. Hollypark, 754-2286. A

**Surfboard**, Jacobs, 9' 2", \$60. Redondo Bch., 374-1589. A

**Breakfront**, mahogany, Drexel, \$100. L.A., 839-0183. A

**Motorcycle**, German Zundapp, 1,100 miles, \$175. L.A., 756-1431. A

**Freezer**, Marquette, upright, 16 cu. ft., lock w/inside safety handle, \$125. Wilmington, 834-7544. A

**Chevrolet**, 1957, V-8 auto., chrome wheels, \$395. Inglewood, 670-4650. A

**Property**, 2 1/2 acres, in Lockwood Valley, near new Mt. Pinos ski area, \$590 dn., \$59 mo., \$5,900. La Canada, 790-1988. A

**Box Spring** & mattress, full size, Woodland free-standing bookcase-type headboard, \$25. Hermosa Bch., FR 2-1632. A

**Stoves**, 2 2-burner Coleman, gas, \$10 ea. Torrance, FR 1-6758. A

**Washing Machine**, Kenmore, \$75. Compton, 631-3695. A

**Chevrolet**, 1962 2-dr. Impala, auto. trans., 327 eng., r/h, p/s, \$1,100. Hawthorne, OS 5-1779. A

**Formal**, full length, empire waist, size 8-10, lt. blue, 3/4 sleeves, full length half slip, \$20. Lawndale, 676-3050. A

**Ford**, 1958 Town Victoria 500, 4-dr., auto. trans., \$265. Los Alamitos, 430-7388. A

**Ford**, 1964 Galaxie 500XL, \$1,295. Compton, 631-3656. A

**Bicycle**, boy's, \$10. Torrance, FA 8-3306. A

**Piano**, Price & Teeple, upright, \$200. Torrance, 324-2992. A

**Motorcycle**, BSA Scrambler, 175cc, dirt sprocket, knobby tires, \$175. Gardena, 329-8956. A

**Bicycle**, Schwinn, boy's, 26", 1 yr. old, \$25. Long Bch., 591-3968. A

**Chevrolet**, 1964 Impala, air & power, \$1,350. Redondo Bch., 374-2643. A

**Surfboard**, 9'4" Jacobs, \$50. Rolling Hills Ests., FR 8-5175. A

**Chevrolet**, 1-56 sedan delivery, 3/4-ton, rebilt. eng., 4-spd. Hydro, good tires, \$325. Hawthorne, 672-1576. A

**Bicycle**, 10-spd. racing, \$20. Garden Grove, 714-539-1072. A

**Television**, 19" Kaye Halbert, remote control, mahogany console, new picture tube, \$35. Torrance, 372-4676. A

**Tire & Tube**, 4.00/4.80-8 for boat trailer, \$5. P.V. Pen., 377-3806. A

**Ring**, ladies' black star sapphire set in white gold mounting w/5 diamond chips on side, size 6 1/2, paid \$469; \$110. Torrance, 320-6685. A

**Engine**, 1965 Chrysler 273, dual quad., high rise manifold, cam, polished crank, Davis headers, F.I. heads, \$400. Box 1202. A

**Saddle**, English, made in Buenos Aires, \$90. P.V. Pen., 377-9927. A

**Surfboard**, 9' 10" Dewey Weber, car rack, med. size surf jacket, \$95. Inglewood, PL 5-6830. A

## For Sale

**House**, 3-bdrm., 1 1/4 baths, patio, blk. wall fence, planters, attach. gar., cpts., dps., 50 x 150 lot, fruit trees, close to Northrop, \$23,000. Inglewood, 675-6721. A

**Surfboard**, Jacobs, 9'10", concave tail, \$55. Rolling Hills Ests., 375-6397. A

**House**, 3-bdrm., 1 1/4 bath, custom-built, cpts., dps., many deluxe bltin features, fenced rear yard w/3 fruit trees, 2 miles from Plant One, \$28,500. Hawthorne, 675-8829. A

**Jeep**, needs eng. work, \$350. Torrance, FR 0-6444. A

**Ring**, ladies', diamond solitaire, 27 pts., white gold mounting, \$95. Lakewood, HA 5-3584. A

**Rambler**, 1962 2-dr. 400 Classic custom, auto. trans., b/seats, 6-cyl., r/h, good tires, \$595. Long Bch., 438-9700. A

**Shotgun**, 12 gage Winchester, \$75. Huntington Bch., 842-5281. A

**T-Bird**, 1958, air, \$675. Torrance, 370-9127. A

**Yamaha**, 1965, 80cc Street, rack, helmet & new rings, \$200. Culver City, 390-2957. A

**Apt. Bldg.**, 9 deluxe units, \$12,500 yearly gross, \$12,500 dn., \$105,000. Inglewood, 325-9832. A

**House**, 3-bdrm., tile bath, cpts., dps., near schools, \$22,000. No. Redondo Bch., 370-0315. A

**Corvair**, 1960 2-dr., r/h, auto. trans., needs some work, \$125. Manhattan Bch., FR 2-0901. A

**Citroen**, 1954, Model 11, \$200. Playa del Rey, 823-4167. A

**Pickup**, 1960 Falcon Ranchero, 6-cyl., good tires, brakes, removable steel rack, \$525. Norwalk, UN 8-3058. A

**MG**, Magnette, 4-dr. sedan, 1958, classic body, new int., 54,000 miles, \$550. Torrance, FR 9-5690. A

**Piano**, upright, Bush & Gerts, \$50. Manhattan Bch., FR 4-7760. A

**Honda**, Sport 50, 9,000 miles, \$150. Torrance, 326-9341. A

**Ice Skating Shoes**, ladies, size 6, \$7. L.A., WE 6-5903. A

**Chevrolet**, 1956, V-8, auto. trans., \$175. Inglewood, PL 4-5680. A

**Dog**, German shepherd, 1 yr. old, had all shots, \$25. L.A., 754-3665. A

**Volkswagen**, 1964 sedan, r/h, w/w, \$850. L.A., 475-4366. A

**Falcon**, 1966 Futura, air cond., b/seats, p/s, \$2,150. Torrance, 378-8825. A

**Volkswagen**, 1959, 3,000 miles since eng. o/haul, \$565. Eastview, OS 6-6784. A

**Home**, 3-bdrm., lge. fam. rm., 2 baths, dble. fireplace, bltins, new refrig., dps., cpts., G.I. 4 1/2% loan, \$26,900. La Mirada, 697-6784. A

**Moose Antlers**, 3 ft. across, not mounted, \$50. L.A., OR 0-6896. A

**Dining Room Set**, solid walnut table, 6 chairs, table top cover, glass fronted chest, \$300. Torrance, 328-6863. A

**Washer**, Maytag wringer-type, square alum. tub, \$15. Inglewood, 674-5953. A

**Lot**, 50'x170' & lifetime membership in Lake Elizabeth Ranch Club, view o/looks golf course, \$2,500. Saugus, 805-252-2468. A

**Surfboard**, Jacobs, 9'1", \$35. Torrance, 379-9114. A

**House**, 3-bdrm., cpts., custom dps., fireplace, bltins, garb. disp., 10'x15' covered patio, sprinklers, landscaping, completely fenced, \$26,950. Redondo Bch., 376-3505, 675-4870. A

**Bed**, dble., less than 1 yr. old, walnut headboard, \$75. Torrance, 378-1472. A

**Water Softener**, Bruner, fully automatic, cost \$500; \$95. Hawthorne, OS 9-5195. A

**House**, 3-bdrm., & lge. den, 10 min. to Norair, paneled liv. rm., bkfst. bar, patio, fenced playyard, 1 block from grammar school, \$1,500 dn., low taxes, \$21,450. Gardena, 329-2904. A

**Poodles**, AKC, miniature, silver, 6 wks. old, 2 males, 1 female, \$75. Manhattan Bch., 372-9752. A

**Wheelchair**, newly refinished, dual brakes, \$30. Downey, 865-3768. A

**Home**, 3-bdrm., fireplace, 1 1/4 baths, kitchen bltins, cpts., near schools & shopping, G.I. appraisal returned at asking price, \$26,500. Hawthorne, 329-2393. A

**Motorcycle**, BSA 650cc A10, recently o/hailed, new paint, helmet & extras, \$435. Malibu, GL 6-8165. A

**Drum Table**, mahogany, leatherette top, pedestal-type leg, \$8. Redondo Bch., 378-0477. A

**Pool**, Doughboy, filter, 15' x 3' deep, \$45. L.A., 870-7894. A

**Studebaker**, 1950 Champion, 4-dr. sedan, 6-cyl., \$100. Hawthorne, OS 6-0041. A

**Typewriter**, Royal, portable, cost \$150; \$50. Hawthorne, 675-2315. A

**Grand Prix**, 1963, record player, stereo, AM/FM radio, 2 vibrasonics, wire whls., wood steering whl. & wood dash, \$2,100. Hawthorne, 644-6629. A

**Garage Door**, dble., 16' opening for 20 x 20 gar., all hardware inc., \$50 you pick up; \$100 if delivered. Lakewood, TO 6-8977. A

**Hubcaps**, 4, for 1937 Buick, \$16. Inglewood, 758-9182. A

**Pickup**, 1959 Chevrolet, 3/4-ton, 4-spd., o/loads, floating axle, trailer hitch, extra long bed, \$750. Manhattan Bch., 545-2934. A

**Car Cooler**, Wright, 12 volt, incl. 110 V converter for home use, \$20. Long Bch., GA 3-1363. A

**Lot**, in Modoc Recreational Estates in northern California, terms if desired, \$1,795. Torrance, 834-2845. A

**Chevrolet**, 1958 Yeoman station wagon, auto. trans., new tires, brakes, & engine, \$350. Gardena, OS 5-2159. A

## For Sale

**De Soto**, 1955 w/56 Chrysler eng., body good, eng. needs work, \$50. Hawthorne, OS 9-3476. A

**Enlarger**, 35mm Durst Newporter, w/50mm Vivitar lens, \$25. Redondo Bch., 372-4674. A

**Box Carrier**, all metal, 36" x 42" x 8" w/straps & rain gutter clips, \$8. Rolling Hills, FR 7-3487. A

**Rugs**, Oriental, runner, Hurdiston 3' x 11' & Chinese hook, wool, oval, blue, 10' x 14', \$50 ea. Santa Monica, EX 4-8641. A

**Chevrolet**, 1961 Nomad station wagon, p/s, radio, auto. trans., new tires, \$675. P.V. Ests., 377-6658. A

**TV**, RCA, \$20. Hermosa Bch., FR 9-2373. A

**1st Trust Deed**, \$6,000, on beach lot, pays 6% at \$70 mo. for 10 yrs. starting July 15, \$5,000. Manhattan Bch., FR 4-3359. A

**Bicycle**, Schwinn deluxe Sting Ray, paid \$62; \$35. Lomita, 325-4580. A

**Bridal Gown**, empire-fitted sheath, bell sleeves, train, veil, size 10, alterations incl., cost \$130; \$50. Garden Grove, 714-539-3925. A

**Ford**, 1956 convt. new tires & battery, good top & body, needs some eng. work, \$115. Granada Hills, 363-6357. A

**Pickup**, 1962 Ford F-100, V-8, 3-spd., r/h, 6-ply tires, custom cab, 8' bed, \$850. Torrance, 370-8958. A

**Desk**, 4-dwr., & chair, \$40. Torrance, 328-8212. A

**Units**, 11, Spanish-style, 5 1-bdrm., furn.; 5 2-bdrm., furn.; 1 5-bdrm., 2 1/2 baths, sep. house has bar & den, 75' x 200' lot, \$20,400 income, 60-70% loan, 15-20% dn., owner carries 2nd, \$148,000. Hollywood, HO 4-1084. A

**House**, on 1-acre lot, lge. swim pool, \$275 mo. lease incl. pool service, or \$45,900. Woodland Hills, 788-9770. A

**Honda**, Scrambler, new paint, \$425. Inglewood, 677-7382. A

**Units**, 3 2-bdrm., garages, corner lot, in Torrance, \$38,000. Buena Pk., 714-522-5909. A

**House**, 3-bdrm., walking distance to Norair, d/washer, natural cabinets, cpts., dps., sep. utility rm. w/1/2 bath, terrace, fruit trees, covered patio, tropical landscaping, block walls & planters, \$1,000 dn., \$25,500. Hawthorne, 676-8842. A

**Ford**, 1954 station wagon, auto. trans., r/h, \$330. L.A., 472-2031. A

**House**, 2-bdrm. & den, 1 1/4 baths, bltins, lge. encl. yard w/patio, \$500 down, \$145 mo., \$19,800. Anaheim, 714-375-8778. A

**Table Saw**, acetylene welder, radio equipment, old tools, many other items, 50¢ to \$150. P.V., 377-1075. A

**House**, 4-bdrm., family rm., 2 1/2 baths, 1 acre, horses OK, near Northrop Ventura, \$35,000. Somis, 805-482-1186. A

**Organ**, Baldwin Model 40 Orga-Sonic w/percussion added, Philippine mahogany, matching bench, 2 keyboards plus 1 octave of bass pedals, \$295. Redondo Bch., FR 5-3914. A

**T-Body**, fiberglass, \$85. Inglewood, PL 6-4424. A

**Rug**, beige, 12' x 9', \$25. Torrance, 327-6918. A

**Movie Camera**, Bell & Howell, 8mm, director series w/telephoto zoomatic, elec. eye, F/1.8 lens, carrying case & projector, Revere, 8mm, \$125. Manhattan Bch., 545-5591. A

**Volkswagen**, 1963, sunroof 1200 sedan, \$895. San Pedro, TE 1-3935. A

**Ring Set**, diamond wedding & engagement, white gold, \$500 value, \$250 or sell separately. Inglewood, 755-3798. A

**Typewriter**, Royal, reconditioned, w/stand, \$75. Long Bch., GA 4-4863. A

**Range**, Hot Point, white, elec., uncrated, \$190. Sherman Oaks, 788-7519. A

**Mobile Home**, 50' x 12' Fleetwood, 8 mos. old, 2-bdrm., air cond., 45' x 9' awning, thermo-controlled heating, cost \$5,800; \$4,600. L.A., 756-9342. A

**Wheelchair**, folding-type, blue vinyl & chrome, \$75. Hawthorne, 675-8840, 645-2021. A

**Projector**, Kodak, deluxe auto., used 3 times, 8mm, orig. cost \$150; \$85. Inglewood, OR 1-0357. A

**Occasional Chairs**, 2 Danish modern, \$15 ea. Hawthorne, 644-1337. A

**Pontiac**, 1956 sta. wgn., good motor & body, low miles, \$89. Torrance, 324-1270. A

**House**, near Nortronics, tri-level, 4-bdrm., 3 baths, rumpus rm., w/wet bar, air cond., 4 yrs. old, \$45,000. Torrance, 831-0480. A

**Ski Boat**, 14' Catamaran, deep hull, 75 h.p. Evinrude motor, long shaft, pushbutton elec. shift, new seats, 5 ski racks on American trailer, \$1,395. Hawthorne, 676-7109. A

**Boat**, 14' runabout, Mercury Mark 30 o/board, lge. wheel trailer, \$380. Inglewood, OR 1-8672. A

**Stamp Collection**, U.S., blocks, singles, sheets, \$250 or sell individually. Fullerton, 714-879-5126. A

**Guitar Amplifier**, Magnatone, 50 watts, stereo, vibrato, reverb, 4 speakers, professional unit, \$225. Rolling Hills Ests., FR 5-6645. A

**Ford**, 1964 Galaxie 500, 2-dr. h/top, r/h, 390 cu. in., 4-spd. man. trans., hvy. duty susp., cheater slicks, \$1,500. Inglewood, 672-4590. A

**Acreage**, 40 acres, 18 mi. south of Lake Isabella, mountain timber, flexible terms, \$350 acre. Redondo Bch., FR 4-2945, 249-0185. A

**Chevrolet**, Impala, 1960 convt., auto., r/h, \$550. Hawthorne, 644-1889. A

**Home**, 3-bdrm., 1 1/4 bath, pool, library-den w/fireplace, hobby rm. off garage, 60' x 180' lot, near Wilshire Country Club & L.A. Tennis Club, cash to loan & take over 6 1/2% pvt. financing, \$49,500. L.A., HO 5-1380. A

## For Sale

**Axle Gears**, rear, 1965 Mustang, std. 2.8-1 ring & pinion, cost \$80; \$25. Hawthorne, 676-8817. A

**Buick**, 1958 Super 4-dr. h/top, p/s, p/b, r/h, auto. trans., \$350. Hawthorne, 823-3418. A

**Chevrolet**, 1956 station wagon, V-8, 4-dr., auto. trans., p/s, new tires, \$250. San Pedro, 833-6704. A

**Camera**, Polaroid, case, color & flash attachment, extras, \$35. Lomita, 326-3135. A

**Volkswagen**, 1967 sedan, 8,000 miles, \$1,750. So. Gate, LO 9-4441. A

**Honda**, Scrambler 305cc, 1966, \$500. Lawndale, 675-4305. A

**Bicycle**, men's Schwinn Varsity, 10-spd., 27", \$50. Van Nuys, 785-6142. A

**Datsun**, 1965, stake body truck, dual wheels, 4-spd., heater, \$1,200. Compton, 639-4696. A

**House**, 3-bdrm., den, fireplace, bar, 1 1/2 bath, \$28,000. Torrance, 675-4393. A

## Wanted to Buy

**Transceivers**, 6 meter or 2 meter, & access. electronic instruments. Whittier, OX 3-4117. B

**Encyclopaedia Britannica** or World Book set. Downey, 861-6404. B

**Dinghy**, small, any construction & condition, not over 8 ft. long. San Pedro, 833-6045. B

**Pickup**, 1966 Datsun, pay \$1,000. Bellflower, 866-4442. B

**Washing Machine**, used, auto. in good condition. Los Alamitos, GE



## Design Review Scheduled For C-5 Ground Equipment

Northrop Nortronics will mark the passing of another milestone in the C-5 Program tomorrow when a Critical Design Review (CDR) is conducted for C-5 Aerospace Ground Equipment (AGE) at Palos Verdes.

Approximately 30 participants are expected, including 15 review personnel from the Air Force. The remainder will be representatives of Nortronics and Lockheed Georgia Company, prime contractor for the C-5 transport.

M. R. Sumner, deputy C-5 Program manager for Nortronics, will guide the meeting following an agenda prepared by Nortronics' Configuration Management.

During the CDR, Air Force

personnel will obtain technical information required by recently-instituted manuals, called the AFSCM/AFLCM 375 series.

And the design approved during the CDR will establish the production baseline configuration for the Aerospace Ground Equipment Nortronics is producing for delivery to Lockheed which will be used by the Air Force under the C-5 contract.

Equipment scheduled for CDR includes the test set for the inertial-Doppler navigation equipment, the programmer, electronic command signal and the test set for electronic circuit plug-in cards. The latter unit tests the electronic cards employed in organizational and field shop AGE.

## Three Receive Service Pins For 25 Years at Nortronics

Stella Murray and Maxine Berdan lead a large group of Nortronics employees eligible for service awards during May and June.

Mrs. Murray works in Receiving at Nortronics Hawthorne. Mrs. Berdan is secretary to Nortronics' general manager, Fred-



Mrs. Murray



Mr. Burgmaier

erick Stevens. They are the second and third women at Nortronics to complete 25 years with Northrop.

In addition, Everett Burgmaier of Northrop Systems Laboratories passed the 25-year mark earlier this year.

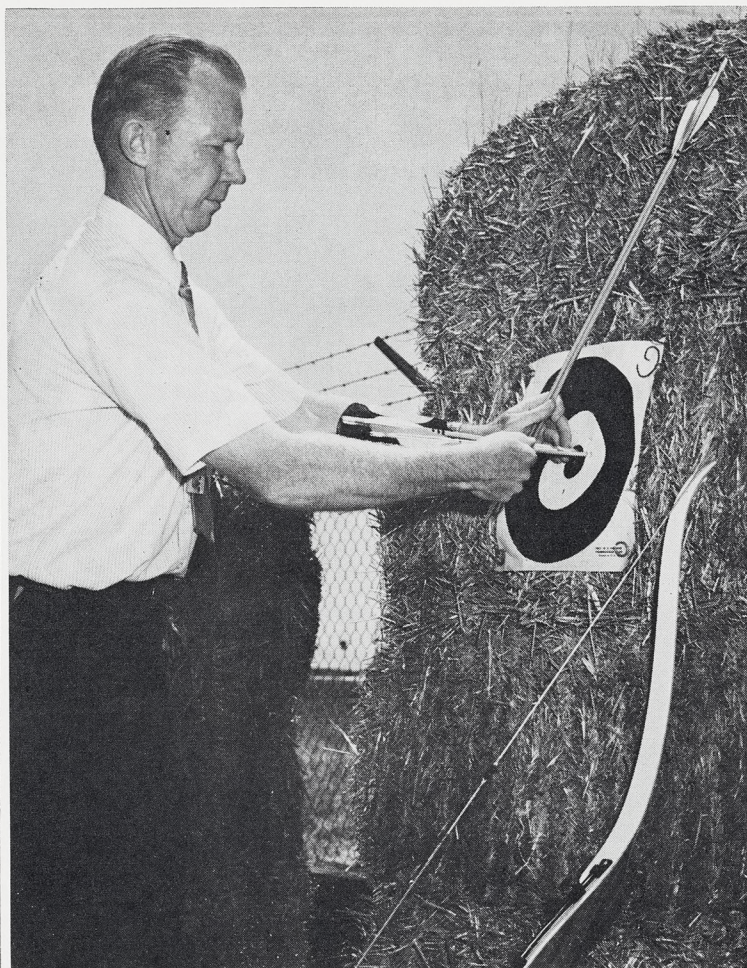
Eligible for Northrop 20-year service emblems are Donald Koehler, Lloyd Adams, Raymond

Brady, K. K. Kennedy and J. L. Tway.

Due to receive 15-year service pins are Phyllis Woodrome, John Balon, Earl McCarty, Albert Arroues, Betty Stage, Paul Kahler, Carl Senn, Oscar Loftus, Herbert Potier, Leonard Green, Angelo Cannava, Harold Long, George Baker, Merton Martin, Harry George, Irving Abels, Marguerite Dougherty.

John Branzetti, Carl Bose, Robert Stone, Richard Sloan, Robert Martin, Raynaldo Saavedra, Marian Burgess, Homer Sherwood, Stanley Gulewich, Adrian Weishaar, David Hall, Lester Lauck, John Langdon, Martha Nicoll, Dorothy Peringer, Stanley Ehlinger, Alden Edwards, Raymond Presnell, Grafton Lyster, Raymond Pracht, David Hammond, Paul Engstrom, Cecil Leverich, George Matter.

Royce Lewis, Norris Smith, Chester Wilson, Robert Marsh, Manuel Fimbres, Robert Sanders, Milton Sumner, Robert Wilson, Kay Tong, John Sekiguchi, Jack Paris, Susumu Horimoto, R. S. Mazy and R. T. Miller.



**CALIFORNIA CHAMPION** — George Garner of Nortronics Anaheim recently won Class "B" title in California Bowmen and Hunters Field Archers Association state meet in Bakersfield. It was Mr. Garner's first venture into competition other than NRC and local industrial shoots around Anaheim.

### GEORGE GARNER

## Surprised Archer a Winner

George Garner of Nortronics Anaheim this month won top honors in the Class B "Freestyle" event of the California Bowmen and Hunters Field Archers Association annual state tournament.

Now Mr. Garner wonders what he'll do for an encore.

That is, this was his first entry in any type of competition other than NRC-sponsored target

shooting. And he's only been an archer for about two years.

Accompanied by his son, Randy, and Tom Dougherty of Nortronics, Mr. Garner went to Bakersfield as a lark. More than anything he wanted to see some of the state's top bowmen in action and how a big tournament (224 shooters) was operated.

His victory came after three rounds in which he garnered 1,495 points. His nearest rival scored 1,456.

### EARNINGS

(Continued from page 1)

increase was due primarily to conversions of debentures.

The backlog of orders on April 30 amounted to \$612,920,000, a 40 percent increase over the backlog of \$435,676,000 recorded a year ago.

## Explorer Scouts Win Appointment To Academies

Three members of Explorer Post 70, sponsored by NRC at Nortronics Anaheim, have won unusual distinctions — appointments to the nation's three military academies.

The youngsters are Tim Kitt, Chick Burlingame and David Blakely.

Each is an Eagle Scout, a member of the California Scholarship Federation and a senior at Anaheim High School.

Mr. Kitt reports to the U.S. Military Academy at West Point this summer. He is past president of Post 70, a varsity track and cross-country star and Chapter chief of the Order of the Arrow.

Mr. Burlingame has been accepted by the U.S. Naval Academy at Annapolis. He is vice president of Anaheim High's Colonist band and a member of the school's marching, pep and concert bands. He is also a member of Beta Sigma fraternity.

Mr. Blakely is a past vice president of Post 70, vice president of his school's Math Club and Chess Club and Beta Sigma. Although accepted by the U.S. Air Force Academy, Mr. Blakely will not be able to attend due to sight regulations.

NRC at Anaheim sponsors Pack, Troop and Post 70 for Cub, Boy and Explorer Scouts, respectively. Pearly Ball is Post adviser, while Jaime Lopez is NRC Scouting commissioner.



**SCOUTS OF DISTINCTION**—This trio of Eagle Scouts, members of NRC-sponsored Explorer Post 70 at Anaheim, were accepted by the nation's three military academies. They are (left to right) Tim Kitt (U.S. Military Academy), David Blakely (U.S. Air Force Academy) and Chick Burlingame (U.S. Naval Academy). Mr. Blakely will be unable to attend due to sight regulations, while the others report this summer.

## Dr. Griffith Appointed to School Board

Dr. Owen H. Griffith, senior technical staff member of the Advanced Avionics Laboratory at Nortronics Hawthorne, has been appointed to the Torrance Unified School District Board of Education.

Dr. Griffith has been with Nortronics for nearly seven years. He was the unanimous choice of the four incumbent board members to fill the vacancy caused by the



Dr. Griffith

recent death of Dr. Kurt Shery.

Before transferring to Hawthorne, Dr. Griffith was chief of Technical Engineering on the Deep Submergence Systems Program (DSSP). Prior to that, Dr. Griffith was supervisor of Advanced Systems at Palos Verdes.

He was one of several persons who filed for the vacant seat on the board, even though he had never sought office before.

"I often attended board meetings," Dr. Griffith said, "but as an interested parent, rather than in any official capacity."

Dr. Griffith's wife is president of the Sam Levy Elementary School Parent-Teacher Association. All six Griffith children attend Torrance schools.

The Griffith family has lived in Torrance for seven years. Dr. Griffith is a member of the American Institute of Aeronautics and Astronautics (AIAA), Pi Tau Sigma, Tau Beta Pi and Phi Kappa Phi.

He received his bachelor's, master's and doctorate degrees in engineering mechanics from Cornell University, Ithaca, New York.

## Tickets Available For Angels, Yanks

Nortronics Personnel Activities office at Anaheim has obtained a block of terrace level reserved seats for the July 2 California Angels-New York Yankees game at Anaheim Stadium.

Tickets sell for \$3.50 each. The game will be played at 1 p.m.



**INSEPARABLE BUDDIES** now are Donald Baker and his safety shoes. Nortronics Anaheim employee had 26-pound item fall and hit his foot, but avoided serious injury due to steel cap in his safety shoes.



# NORTHROP NEWS

NORTHROP NORTRONICS

Published biweekly by Northrop Corporation, Beverly Hills, California

Vol. 25, No. 13

July 5, 1967

## Gyro Unit Contract Won By Needham

Northrop Nortronics' Needham Department has received a contract to produce electronic equipment which will help aircraft land automatically on Navy carriers in all-weather and around-the-clock operations.

Northrop will build six gyro-stabilized vertical reference systems for use aboard carriers under contract to Textron's Bell Aerosystems Company, Buffalo, New York. The reference systems will be built to Northrop design.

The equipment provides pitch and roll data to stabilize the landing system's radar antennae. Included in the equipment is circuitry which compensates for the effects that latitude and ship's heading have on gyro performance, and for the acceleration forces created when a ship turns.

The All-weather Carrier Landing System into which the Northrop equipment will fit, automatically steers the airplane so that the plane and ship are aligned properly upon contact on the carrier deck.

The stabilizer units will be equipped with gyroscopes produced at Northrop Nortronics' Precision Products Department, Norwood, Massachusetts.



Mr. Gasich



Mr. Douglas

## Gasich, Douglas Promoted

George F. Douglas, who has headed the Ventura Division of Northrop Corporation since 1961, has been promoted to president of Northrop Carolina, Inc., a wholly-owned subsidiary of Northrop, in Asheville, North Carolina.

He will be succeeded as Corporate vice president and Northrop Ventura general manager by Welko E. Gasich, Corporate vice president and formerly assistant general manager of the company's Norair Division in Hawthorne.

The new appointments, effective July 1, were announced by Thomas V. Jones, Northrop presi-

dent and chairman of the board.

Since last September, Mr. Gasich has been engaged in advanced studies at Stanford University as an executive fellow under the Stanford-Sloan program.

He joined Northrop in 1953 as chief of preliminary design and played a major role in the conception and development of the T-38 Talon, a supersonic training plane, and the F-5A supersonic tactical fighter.

Mr. Gasich holds an A.B. degree with honors in mechanical engineering and a master's degree in aeronautical engineering from Stanford. He also was awarded the professional degree in aeronautical engineering by the California Institute of Technology.

During World War II, he served as a Naval officer with major assignment as flight research engineer for the Ames Aeronautical Laboratory at Moffett Field, California. He has served as consultant to the aerospace vehicles panel of the Scientific Advisory Board, Chief of Staff, U.S.

(See PROMOTIONS, page 4)

## C-5 Testing on Schedule At Nortronics Hawthorne

An intensive test program is moving ahead on schedule at Nortronics Hawthorne for initial C-5 transport navigation system components.

Nortronics' Navigation department under contract to the Lockheed Georgia Company, C-5 prime contractor, is developing and manufacturing a com-

See photos, page 4

plete navigation system for the new Air Force transport. Principal elements of the system are the C-5 inertial Doppler navigation equipment (IDNE) as well as various items of supporting aerospace ground equipment.

The complete IDNE airborne system includes 11 major components, each known as a line replaceable unit.

Last month the first LRU completed, an auxiliary navigational computer, was moved into a new Systems Test Laboratory for extensive tests.

Subsequently, control and indicator LRU's have been set up with the initial computer unit for functional evaluation.

Prior to delivery to the Systems Test Laboratory, each individual component in the auxiliary navigational computer and in the control and indicator panels was put through a complete checkout by Computer Engineering Evaluation and Test personnel under Bob Sanders.

Elsewhere, development and fabrication was under way for three required aerospace ground equipment items by the Systems Support Equipment organization. These items were required by Fred Shockley's Systems Evaluation and Integration unit prior to the launching of test phases. These units were a tape reader/-

fill unit, system rack and cabling and a new computer monitoring unit.

The latter unit, which enables an operator to control and check out each complete computer, was programmed for a two-week checkout period prior to use.

However, the entire checkout phase was accomplished in just four hours.

## Board Elects James Willson To Directorship

James D. Willson, financial vice president of Northrop Corporation, has been elected a director of the company, Thomas V. Jones, Northrop president, has announced.

Mr. Willson joined Northrop

as financial vice president in January of 1966. He had been financial vice president of Tidewater Oil Company since 1959 and prior to that was vice president of finance of the Norris-Thermador Corporation.

An authority on the financial, control and planning functions of industry, he is the co-author of two books on corporate finance, "Controllershship" published in 1963, and "Business Budgeting and Control" published in 1956. In 1959 he received the Lybrand Gold Medal Award from the National Association of Accountants for his outstanding contribution to accounting literature.



Mr. Willson

## Ten Sons, Daughters Earn National Merit Scholarships

Ten sons and daughters of Northrop Corporation employees have been named recipients of company-sponsored National Merit Scholarships.

The students—five young men and five young ladies—will use the scholarships in attending colleges and universities throughout the country.

Winners are Sue Ann House, Ellen Greenberger, John Sutton, Terry Vandever, Mary Finley, Lawrence Hickish, Pamela Oliver, Robert Shoup, Jane Porter and Andrew Szekely.

Miss House, of Newport Beach, is a graduate of Bakersfield High School. She plans to major in sociology at the University of California's Irvine campus. Her father, Howard E. House, is an engineering specialist at Nortronics Anaheim.

See photos, page 2

Miss Greenberger, daughter of Mr. and Mrs. Henry Greenberger, is a graduate of Culver City High School. She plans to attend San Francisco State College. Her father is a senior engineer at Nortronics Palos Verdes.

Mr. Sutton, a graduate of Westchester High School, is the son of Mrs. Mary Sutton, a member of the Finance department at Nortronics Anaheim. He plans to enroll at the University of Southern California.

Mr. Vandever, son of Mr. and Mrs. R. L. Vandever, plans to attend Michigan State University. He is a graduate of Lennox High School. His father is a

senior engineer at Nortronics Hawthorne.

Miss Finley, a graduate of Palos Verdes High School, is the daughter of Mr. and Mrs. Lawrence Finley. Mr. Finley is education and development supervisor at Norair. Miss Finley plans to enter Pomona College.

Mr. Hickish, son of Mr. and Mrs. Edward Hickish, is a graduate of Loyola High School. He will enter the University of Santa Clara in the fall. His father is a quality engineering analyst at Norair.

Miss Oliver, daughter of Mr. and Mrs. James Oliver, plans to attend Stanford University. She is a graduate of North High School, Torrance. Her father is a member of technical management at Norair.

Mr. Shoup, also a graduate of North High School, plans to attend Pomona College. His parents are Mr. and Mrs. David Shoup. Mr. Shoup is a technical data analyst at Norair.

Miss Porter, a graduate of Goldsboro High School, Goldsboro, North Carolina, is the daughter of Mr. and Mrs. E. G. Porter. She plans to attend North Carolina State University. Her father is employed by Page Communications, a subsidiary of Northrop Corporation.

Mr. Szekely is a graduate of Canton High School in Norwood, Massachusetts. His father is employed by the Nortronics Precision Products Department, in Norwood.



TEAMS IN REVIEW—Rear Admiral R. B. Fulton, USN, deputy commander for Engineering, Naval Ship Systems Command, listens as Hal Withee, TEAMS project engineer, explains operation of new Anaheim facility where TEAMS unit is being prepared for tests with Navy radar equipment. Others on hand for visit

of the Navy's top TEAMS official are (from left) Commander Harry Thompson, DCASD-Anaheim chief; Frank Lynch, Nortronics vice president and Anaheim manager; Bill Van Orstrand, TEAMS program manager; and Jim Norman, chief, Automation Systems Applications group.





SUE ANN HOUSE looks at the scholarship certificate she received from Dr. V. W. Howard (right), vice president and manager of Northrop Systems Laboratories. With her are her parents, Mr. and Mrs. Howard E. House. Mr. House is an engineering specialist at Nortronics Anaheim.



LAWRENCE HICKISH holds the scholarship certificate he has accepted from Roy P. Jackson, vice president-Technical of Norair. He is accompanied by the Rev. Edwin J. McDermott, principal of Loyola High School, and by his parents, Mr. and Mrs. Edward Hickish. Mr. Hickish is a quality engineering analyst.



ELLEN GREENBERGER, accompanied by her parents, Mr. and Mrs. Henry Greenberger, accepts a certificate from Dr. V. W. Howard, manager of Northrop Systems Laboratories. Her father is a senior engineer at Nortronics Palos Verdes.



MARY FINLEY accepts her scholarship certificate from Roy P. Jackson, vice president-Technical of Northrop Norair. With her are her parents, Mr. and Mrs. Lawrence Finley. Mr. Finley is education and development supervisor at Norair.



ANDREW SZEKELY (second from left) receives his scholarship award certificate from John R. Baraniak, director of Industrial Relations at the Nortronics Precision Products Department. With them are Andrew's father (left) and Robert O'Donnell, his principal.

## Sons, Daughters of Employees Awarded 10 Merit Scholarships



TERRY VANDEVEER, accompanied by his parents, Mr. and Mrs. R. L. Vandever, accepts his National Merit Scholarship certificate from Ross Miller, Corporate vice president and manager of Navigation at Nortronics. Mr. Vandever is a senior engineer at Nortronics Hawthorne.



ROBERT SHOUP, a graduate of North High School, Torrance, receives a handshake from Roy P. Jackson, vice president-Technical of Northrop Norair, after receiving his scholarship certificate. Flanking him are his parents, Mr. and Mrs. David Shoup. Mr. Shoup is a technical data analyst at Norair. With the group is Dr. Richard Guengerich, principal of North High.

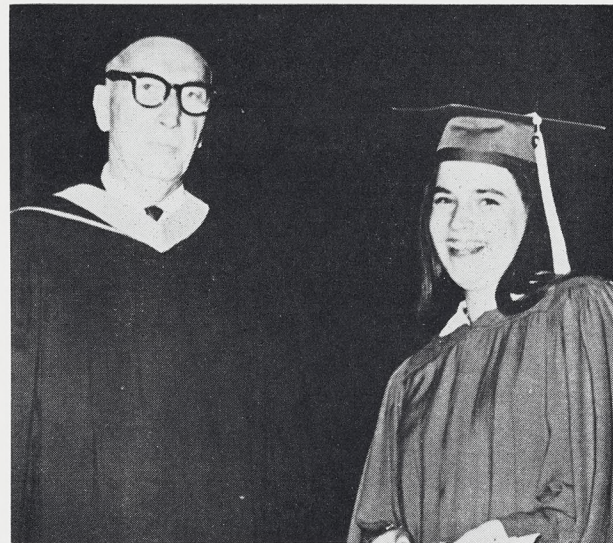


PAMELA OLIVER, a graduate of North High School, Torrance, accepts a scholarship certificate from Roy P. Jackson, vice president-Technical of Northrop Norair. With her are Dr. Richard Guengerich, North High principal, and her parents, Mr. and Mrs. James Oliver. Mr. Oliver is a member of Technical management at Norair.

Photos by Bob Thornton



JOHN SUTTON, accompanied by his mother, Mary Sutton (right), and his grandmother, Sue Schmitt, accepts his certificate from Don Lewis, treasurer of Northrop Nortronics. Mrs. Sutton works in the Finance department at Nortronics Anaheim.



JANE PORTER, daughter of Mr. and Mrs. E. G. Porter, talks with her principal, C. W. Twiford, upon graduation from Goldsboro High School in Goldsboro, North Carolina. Her father is an employee of Page Communications, a subsidiary of Northrop.



Classified

Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private businesses are not accepted. The Northrop News reserves the right to edit or omit ads. Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 62. Ads are limited to one item and one ad per person each issue. Deadline is noon Wednesday, one week before publication.

**For Sale**  
**Surfboard**, 9' 0" Jacobs, \$35. Redondo Bch., FR 2-3827. A  
**Camera**, Alpa single lens reflex, 35mm, case, auto. f1.8 lens, \$155. Sherman Oaks, ST 8-9709. A  
**Camera**, Argus C-3, 35mm, flash, light meter, case & gadget bag, \$25. Inglewood, OR 1-6692. A  
**Golf Clubs**, Lefties, 9 irons, 4 woods, bag, \$65. Inglewood, OR 2-8981. A  
**Cemetery Lot**, single, Parkview, Inglewood Park Cemetery, \$550. Torrance, TE 5-2128. A  
**Guitar**, Rickenbacker, 12-string, case, fire-glo finish, cost \$400; \$250. La Habra, 691-5166. A  
**Leroy Lettering Set**, Keuffel & Esser, pens & extra electrical template, cost \$140; \$40. Torrance, FR 1-2531. A  
**Acres**, 5-acre ranch or cabin site, north of Rosamond, \$34.50 down, \$34.50 mo., \$3,450. Torrance, FR 8-1026. A  
**Ford**, Model A, 1929 special cpe., partially restored, good eng., all spare parts, \$375. Lancaster, WH 2-8568. A  
**Yamaha**, 80, 1965, oil injected, trail & street gears, buddy seat, \$260. Lynwood, NE 2-8596. A  
**Travel Trailer**, 14', elec. brakes, 2 butane bottles, sink, stove, oven, sleeps 4, \$395. Torrance, 378-5924. A  
**Surfboard**, 9' 10", Dewey Weber, car rack, medium-sized surf jacket, sell as a unit only, \$95. Inglewood, PL 5-6830. A  
**Lot**, lake view, new boat slip, Bass Lake, on quiet cove, nice timber, large, fairly level, \$3,500. Box 1301. A  
**Land**, 40 acres, Xmas Valley, Ore. recreation area, 6 miles to townsite, \$100 acre or \$3,500. Lennox, 677-3788. A  
**Austin Healey**, 1957 100-6, 6-cyl., \$795. Torrance, DA 9-9670. A  
**Trailer**, 2-wheel, approx. 5 x 10, incl. spare tire, \$75. L.A., OR 0-5927. A  
**Dodge**, 1958 Coronet sedan, 4-dr., auto. trans., air cond., r/h, \$325. Torrance, DA 7-9044. A  
**TV**, 21" Hoffman, modern cherry, console, \$40. P.V. Pen., 377-3806. A  
**Camper**, 1959 Ford, 3/4-ton, air, many extras, low mileage, \$1,595. Gardena, DA 4-2587. A  
**Cadillac**, 1955 w/1957 eng., all power, air cond., 2 new tires, Coupe De Ville Deluxe, \$300. Hawthorne, 679-5364. A  
**Corvette**, 1958, 327 cu. in. eng., Hydro, posi-rear end, \$1,000. Redondo Bch., 370-7130. A  
**Ford**, 1954, V-8, 2-dr., stick shift, custom reblt. eng., new batt., gen., voltage reg. & starter, Premium tires, r/h, \$200. Manhattan Bch., FR 2-4324. A  
**House**, 2-bdrm., gar., fenced yard, 50' x 125' lot, near schools, 10% down, \$19,500. Manhattan Bch., 438-8331. A  
**Falcon**, 1961, 4-dr., r/h, \$225. Gardena, 324-3410. A  
**Ford**, 1955, V-8, 4-dr., 3-spd., needs body work, \$100. Hollywood, NO 2-7421. A  
**Renault**, 1959, sunroof, r/h, \$95. Gardena, FA 1-4621. A  
**Range**, G.E. elec., deluxe, \$100. L.A., OR 0-6896. A  
**Desk**, maple, 3 drws. on side w/center drwr., top, 18 1/2" x 30 1/2", \$30. Hermosa Bch., 374-0178. A  
**Scuba Equipment**, \$150. Huntington Bch., 842-5281. A  
**Trailer**, 1-wheel, spare tire, suitable for luggage or camping equipment, \$30. Los Alamitos, GE 1-0843. A  
**Ford**, Falcon, 1960 2-dr., 6-cyl., 3-spd., chrome wheels, \$175. Hawthorne, 672-1576. A  
**Tape Recorder**, PR 65 President, 4-track stereo, record & playback, \$65. Los Alamitos, 430-1388. A  
**Rambler**, 1962 American, 4-dr., stick shift, r/h, \$395. Glendale, 244-6614. A  
**Playpen**, wood, teething rails, \$10. Lynwood, 635-9370. A  
**Shotgun**, Winchester, 12 ga. automatic, \$45. Playa del Rey, 823-3947. A  
**Bicycle**, Raleigh, men's 27" frame, 10-spd., \$40. Gardena, 644-1744. A  
**Daihatsu**, needs tune-up & a new battery, \$50. Hawthorne, 676-6122. A  
**Shotgun**, Ithica, 20 ga., model 37 feather-light, vent. rib, recoil pad, \$110. Torrance, 326-5731. A  
**Box Spring**, frame, full size, \$15. Granada Hills, 360-3865. A  
**Spotlight**, chrome, for automobile, electrical, never used, \$10. L.A., 755-9071. A  
**Saw**, 10" radial arm, w/stand & extras, \$200. Hawthorne, 675-8492. A  
**Wedding Dress**, bouffant w/train, lace top w/taffeta skirt, size 6, \$60. Inglewood, 671-9306. A

**For Sale**  
**Comet**, 1962 2-dr. custom, r/h, std. trans., \$450. Buena Pk., 527-1201. A  
**Honda**, 1964 Sport, \$150. Hawthorne, 676-3142. A  
**Aquarium**, 26 gal. Pemco, w/hood, fluorescent light, underground filter, heaters, pump, stand, \$40. Hawthorne, 676-4536. A  
**Sailboat**, 12' Catboat, fiberglass, Dacron sails, 4 cushions, anchor, oars, norn, carrier, \$450 value; \$250. Tarzana, 345-3665. A  
**Utility Trailer**, box-type, running lights, hvy. duty springs, for hauling over 1 ton loads, \$25. P.V. Pen., 377-6287. A  
**Volkswagen**, 1964, good tires, stereo, \$1,025. Inglewood, OR 7-6204. A  
**Stereo Console**, Columbia, 1 1/2 yrs. old, \$90. Gardena, 329-8162. A  
**Lincoln**, 1962 Continental convt., factory air, \$1,495. Pac. Palisades, 391-9826. A  
**Motorcycle**, 1965 Royal Enfield, 750 cc, \$750. L.A., 293-4667. A  
**Refrigerator**, Hotpoint, 16 cu. ft., single door, \$20. Gardena, 321-8908. A  
**Chevrolet**, 1966 Impala h/top cpe., 2-dr., p/s, p/b, still under warranty, \$2,250. Torrance, 370-4210. A  
**House**, modern 3-bdrm. plus 70 acres, gas, electricity, on paved highway near Ft. Smith, Ark., near new water project, \$28,000. Burbank, 848-7790. A  
**Tape Recorder**, Akai, model M7SP, stereo, \$350. Torrance, 324-2451. A  
**Corvair Monza**, 1963, 2-dr., auto. trans., 32,000 mi., \$750. Lawndale, 676-3050. A  
**Volkswagen**, 1961 sedan, new tires, 47,000 miles, \$895. Whittier, 323-6585. A  
**House**, 3-bdrm., tiled bath, lge. kitchen, enc. patio, near schools & shopping, ChV appraised, \$18,300. Gardena, 323-6622. A  
**Motorcycle**, BSA 500 cc, 1951, \$250. Inglewood, 671-9043. A  
**Playhouse**, 4' x 5' x 7', 6 mos. old, \$35. Orange, 637-8150. A  
**Mercedes 220**, 1954, 4 new tires, recently upholstered, \$350. Redondo Bch., 374-3766. A  
**Chevrolet**, Bel Air, 1959 4-dr., 8-cyl., r/h, twin pipes, spare muffler & carb., 4 new tires, \$295. Hawthorne, 675-3446. A  
**Lawnmower**, Craftsman 18", reel type, new tires, chain, axles & dogs, \$35. Torrance, 370-6896. A  
**Surfboard**, 9' 3" Hobie, cost \$150; \$75. Long Bch., GA 4-4863. A  
**Home**, Hollywood Riviera, 3-bdrm., family rm., 1 1/4 baths, cpts., dps., bltins, near schools, bus line & Nortronics P.V., \$36,900. Torrance, 375-6634. A  
**T-Bird**, 1963, air cond., p/s, p/b, p/windows & seat, \$1,500. P.V. Pen., FR 4-3273. A  
**Pups**, 1/2 Yorkshire terrier & 1/2 maltese, male & female, \$50. Torrance, 755-4656. A  
**Occasional Chair**, blond, green uphol., \$8. Redondo Bch., 378-0477. A  
**Volkswagen**, 1965 sedan, 21,000 mi., r/h, \$1,350. Redondo Bch., 376-3624. A  
**Pickup**, 1930 Model A Ford roadster, completely stock, \$500. Downey, TO 2-4732. A  
**BMW**, 1958 R60, saddlebags, 2 seats, 2 sets of mufflers, sell with or w/out accessories, \$450. Anaheim, 535-3723. A  
**Movie Camera**, professional-type, 8mm Canon Cine Zoom model 512, F1.2 zoom lens 8.5-42.5mm; bltin meter, many extras, leather case, \$200. L.A., 467-9812. A  
**House**, 4-bdrm., family rm., 2 1/2 baths, 1 acre, horses OK, near Northrop Ventura, \$35,000. Somis, 805-482-1186. A  
**Chevrolet**, 1964 Impala, 2-dr. h/top, p/s, p/b, auto. trans., w/s/w, \$1,595. Hawthorne, 679-2456. A  
**Triumph**, 1964 Bonn., extra chrome, low mileage, custom seat, \$825. Redondo Bch., 379-4979. A  
**Chevrolet**, 1955 sedan, r/h, Powerglide, 1-owner, 50,000 miles, needs some body work, \$250. L.A., AX 4-0727. A  
**GTO**, 1965, 389 cu. in., tri-power, 4-spd., positraction, slicks, \$2,000. Wilmington, 830-7580. A  
**Dining Room Set**, hutch, 6 chairs, 2 ext. leaves, fitted pads, \$300. Torrance, FA 8-6863. A  
**Reclining Chair**, dble. size Bell, makes into bed, ottoman inc., \$75. Hawthorne, 644-1337. A  
**Home**, 2-bdrm., newly redecorated, with or w/out furniture, lge. 2-car gar., terms, will carry 2nd mortg., \$22,950. Torrance, FR 1-5114. A  
**Racing Bicycle**, Italian Legnano, comp. Campagnolo equipment, Pirelli sew-up tires, toe clips, extras, \$90. Manhattan Bch., 376-5139. A  
**Hardtop**, bubble window & vent, customized, 1966, for 100-4 & 3000 Austin Healey, cost \$325; \$175. Box 1302. A  
**Couch**, provincial, \$60. Manhattan Bch., FR 2-0901. A  
**Ford**, 1962 2-dr. h/top, 4-spd. trans., 390 Hi-Perf., 375 h.p., cam & solids, 20,000 miles on eng., many extras, \$950. Anaheim, 774-6012. A  
**Chair & stool**, Naugahyde, \$15. L.A., 870-7894. A  
**Camera**, 35mm, f1.9 up to 1/500 second, made by Lord, case, \$25. P.V. Pen., 377-7156. A  
**Chevrolet**, 1956 Bel Air, 2-dr. sedan, \$300. Hawthorne, OS 6-9874. A  
**House**, 2-bdrm. & den, cpts., dps., lge. enc. yard, \$27,995. Inglewood, 679-8856. A  
**TV**, Zenith, 24", b/w, on swivel base, mahogany cabinet, \$35. Culver City, EX 7-3504. A

**For Sale**  
**Elva Mk. V**, Chevy II w/fuel injection, trailer, race-equipped, \$1,400. Hawthorne, 714-539-7071. A  
**Gas Filler Plate**, chrome-plated, bronze, 2, for boat, many other parts, never used, \$7 ea. Redondo Bch., 370-9626. A  
**Home**, 3-bdrm., 1 1/4 baths, cpts., dps., extra lge. backyard, 20' x 40' filtered pool, stone waterfall, brick patio, attach. gar., in Long Bch., \$24,950. Hawthorne, 431-6468. A  
**Travel Trailer**, 16' Aljoa, alum., sleeps 5, 10' x 16' cabana, many extras, elec. brakes w/auto. hydraulic act. unit, \$595. Whittier, OX 5-6598. A  
**Lot**, on corner, overlooking ocean, underground utilities, \$1,000 down, owner carry note at 6%, terms, \$22,900. P.V. Ests., 377-0146. A  
**Table**, 4' x 8', custom table cover, rack, balls & cues, \$200. San Pedro, 831-4255. A  
**Chevrolet**, 1966 Impala Super Sport, 327 eng., p/b, p/s, radio, tape recorder, 19,000 miles, \$500 dn., \$2,500. Hawthorne, 644-3798. A  
**Home**, 3-bdrm., family rm., 1 1/4 baths, many features, for rent, \$155 mo. or \$2,000 down, \$23,000. So. San Gabriel, 288-6594. A  
**Flying Club**, Hawthorne Airport, Bonanzas, Cessna 172s & Ercoupe, \$450. Torrance, 373-1617. A  
**Bicycle**, girl's 24", needs paint, \$3. Inglewood, PL 6-7337. A  
**Chevrolet**, 1954 coupe, 6-cyl., auto. trans., r/h, good tires, \$150. Redondo Bch., FR 5-3257. A  
**Washing Machine**, Kenmore, newly rebuilt, \$50. Manhattan, FR 2-8219. A  
**Range**, Gaffers & Sattler, auto., sep. oven & broiler, \$75. Torrance, DA 9-3-00. A  
**Slip Lot**, at Saiton Sea, boat dock on channel & lot for house, water, sewer, elec., \$7,100. Anaheim, 535-1694. A  
**Exec. Home**, 3-bdrm., 3 baths, custom built, cpts., ops., deluxe bltins, stereo-bltin, fenced yard, guest rm. back of lot, Garden Grove, \$11,000 down, \$38,500. El Segundo, EA 2-4496. A  
**House**, 3-bdrm., walking distance to Norair, sep. utility room w/1/2 bath, covered patio, terrace, fruit trees, tropical landscaping, block walls & planters, d/washer, cpts., dps., \$1,000 dn., \$25,500. Hawthorne, 676-8842. A  
**Refrigerator-freezer** comb., G.E., 15 cu. ft., 1961, white, l.h. door, pull-out freezer comp., \$200. P.V. Pen., 541-1063. A  
**Aquarium**, Metaframe, 15-gal. w/guar. motor filter, auto. heater, reflector hood & bulbs, other access., \$25 or sell separately. Gardena, 327-4346. A  
**Machinist Tools**, complete w/10-drwr. box, 8-drwr. rollaway cabinet, \$300. Long Bch., 423-1261. A  
**Child's Items**, tricycle, portagate, car bed, stroller, other items, \$15. P.V., FR 7-4674. A  
**Cadillac**, 1966 sedan DeVille, 14,000 miles, air cond., full power, \$4,800. Anaheim, 772-2547. A  
**Ironer**, Mont. Ward, 9 fabric settings, used 3 times, \$45. Long Bch., GA 3-1363. A  
**TV**, RCA, b/w, large screen, remote control, stereo sound system, \$90. Hawthorne, 679-6148. A  
**Dishwasher**, G.E. deluxe, \$100. Inglewood, 673-0470. A  
**Accordion**, 120-bass La Scala, white, model 7432 TD, used 4 mos., cost \$487; \$185. Culver City, 836-4934. A  
**Mustang**, 1965 h/top, V-8, 3 spd. trans., r/h, w/s/w, low mileage, \$1,750. Inglewood, 671-3631. A  
**Oldsmobile**, 1965 Cutlass 4-4-2, 4-spd., new tires & shocks, \$1,920. Arcadia, 447-9991. A  
**Stove**, gas, dble. oven, \$85. P.V. Pen., 541-1568. A  
**Auto Stereo**, RCA, 8-track w/2 speakers, 2 8-cartridge tapes, \$50. So. Gate, LO 6-1546. A  
**Volkswagen**, 1966 DeLuxe sedan, \$1,575. Manhattan Bch., 545-1907. A  
**Home**, 2-bdrm. & den, 1 1/2 bath, large fireplace, bltins, cpts., dps., 10% down, \$32,000. Inglewood, DA 9-2174. A  
**Dodge**, 1966, custom Sportsman van, V-8, auto. trans., r/h, 15,000 mi., \$2,300. Huntington Bch., 714-842-2220. A  
**Pups**, pom., male & female, AKC reg., \$75 & up. Lawndale, 371-0886. A  
**Pups**, miniature poodle, silver grey, 2 males, 1 female, champion stock both sides, 9 wks. old, \$100 ea. Hawthorne, 676-9518. A  
**Surfboard**, 9' 4" Jacobs, \$50. Rolling Hills Ests., FR 8-5175. A  
**Chevrolet**, 1956 station wagon, 4-dr., V-8, Powerglide, new tires, \$225. San Pedro, 833-6704. A  
**Honda**, 50, C-100, never driven, \$200. Inglewood, 674-4285. A  
**Piano**, Story & Clark, rebuilt, \$250. Gardena, OS 5-2159. A  
**Air Conditioner**, 110 V, window-type w/ mounting kit, \$40. L.A., 837-4036. A  
**T-Bird**, sunroof, 1960, \$650. San Pedro, 831-9518. A  
**Stereo-Orthophonic**, full console, AM-FM, phono, tape input 140 W stereo amp., 2 match. cabinets, RCA, \$125. No. Hollywood, 765-3266. A  
**Lawnmower**, gasoline, 20" rotary, \$20. Garden Grove, 539-1072. A  
**Pups**, miniature poodles, AKC, silver, male w/pedigree, \$60. Manhattan Bch., 372-9752. A  
**Patio Slabs**, red brick, 35 2" x 18" x 24", \$1 ea. Wilmington, 834-7188. A

**For Sale**  
**Chevrolet**, 1965 pickup, 6-cyl., 1/2-ton w/ deluxe camper & equipment, 11,000 miles, \$1,650. Inglewood, OR 4-0870. A  
**T-Bird**, 1958, air, orig. owner, \$650. Torrance, 370-9127. A  
**Corvair Monza**, convt., 1963, 1-owner, \$750. L.A., 293-1426. A  
**Wanted to Buy**  
**House**, 3-bdrm., 1 1/2 bath, in Anaheim or Fullerton area, under \$20,000. Anaheim, 714-635-4983. B  
**Sleeping bags**, 2 used, in good condition. P.V., 377-7798. B  
**Tent**, outside frame, good condition. Hawthorne, 676-8950. B  
**bicycle**, lauy's 26", lightweight, multi-speed, appearance not important, must be in good to excellent mechanical condition. Redondo Bch., FR 3-2710. B  
**Filter** for small pool, approx. 1,000 gal. capacity. San Pedro, 833-6045. B  
**Hi-Fi Equipment**, amplifier, Dynakit Mark III, Dynakit PAS-2 preamplifier, AR-1W & Janzen electrostatic speakers. L.A., 836-5575. B  
**Pack Packer Equipment**, down bag, kelly pack. Redondo Bch., 375-6994. B  
**Pool**, Doughboy-type, good condition, minimum size 15' x 36". Torrance, DA 3-2144. B  
**Piano Stool**, swivel top. L.A., 473-6186. B  
**Radio Equipment**, for amateur, 6 meter or 2 meter, base or mobile. Whittier, OX 3-4117. B  
**For Trade**  
**Lot**, unobstructed ocean view, in Palos Verdes, tully improved, 75 x 150 level, trade for home in Torrance. P.V., FR 7-4943. C  
**Free (To Be Given Away)**  
**Pups**, 4 mos. old, female, shepherd collie, to good home, preferably w/children. Hawthorne, 676-8960. D  
**Rentals Offered**  
**Cabin**, Big Bear Lake, sleeps 7 to 9, \$18 w/end; \$50 wk. Bellflower, TO 7-0662. E  
**Apt**, single, newly redecorated, new refrig., cpts., furn., lady preferred, \$50. Hawthorne, 754-9866. E  
**Apt**, 2-bdrm., unfurn., cpts., dps., bltins, pvt. balcony, closed gar., laundry, \$130 mo. Torrance, FR 5-0867. E  
**Apt**, deluxe, 1-bdrm., pool, \$95 mo. Redondo Bch., 376-2117. E  
**Cabin**, Green Valley Lake, \$55 wk. Torrance, 320-2002. E  
**Apt**, 1-bdrm., furn., 10 min. from Northrop, \$87.50. Inglewood, OR 1-0357. E  
**Apt**, ocean front, on Esplanade, 2-bdrm., 1 bath, lge. living rm., cpts., dps., refrigerator, bltin stove & Nutone blender, utilities pd., part furn. or unfurn., \$250 mo. Lomita, FR 2-0309. E  
**Home**, Lake Arrowhead, North Shore area, 3-bdrms., rumpus rm., 2 baths, min. 3 nights, sleeps 10, \$150 wk. or \$24 night. L.A., 476-1842. E  
**Cabin**, A-frame, furn., sleeps 5, 40 miles from Colorado Springs, near 2 lakes & river, \$70 wk. Granada Hills, 894-1937. E  
**Apt**, modern, on Catalina Island, bicycles to use, walking dist. to beach, 2 adults, \$60 wk.; 2 adults & 2 children, \$75 wk. Gardena, 323-7470. E  
**Exec. Apt**, 2-bdrm., 2 baths, 1,500 sq. ft., lux. features, \$210 mo. Inglewood, 670-6084. E  
**Vacation Cabins**, Lake Gregory & Crestline, sleeps 6, make reservations now to Sept., \$60 wk. Venice, EX 1-2040. E  
**Home**, 4-bdrm., new, many extras, lease, \$300 mo. P.V., 377-6658. E  
**Studio Apt**, 1 & 3 bdrm., 2 baths, cpts., bltins, gar., laundry, 10 min. from Anaheim, 1-bdrm., \$90 mo. L.A., 756-3096. E  
**House**, 3-bdrm., 1 1/2 bath, hobby rm., fireplace, cpts., patio, lge. landscaped fenced yd., newly decorated, near Nor. Anaheim, \$150 mo. Orange, 714-538-7648. E  
**Cottage Units**, separate, 1-bdrm., newly redecorated, adults, \$100 mo. Hawthorne, 673-4747. E  
**Bachelor Apt**, furn., TV, 4 short blocks to Northrop, incl. all utilities, \$16 wk. San Pedro, TE 3-2512. E  
**Apt**, 1-bdrm., furn. or unfurn., 2-bdrm., unfurn., 2 blocks from Norair, cpts., dps., bltins, forced air heat, adults, \$100-\$120. Hawthorne, OS 6-5425. E  
**Apt**, 2-bdrm., 1 1/4 bath, pvt. patio, 2-car gar. w/lockers, cpts., dps., bltins, air cond., Fullerton College District, avail. Aug. 1, desire mgr., \$145 mo. lease or \$150 mo. Buena Pk., TA 8-2857. E  
**Home**, 3-bdrm., w/in 2 miles of Norair, lge. fenced backyard, covered patio, bltin barbecue, \$155 mo. Hawthorne, OS 5-3173. E  
**Cottage**, Ocean Beach, San Diego, make reservations now, \$30 w/end; \$65 wk. Buena Pk., 714-826-2007. E  
**Apt**, 1-bdrm., furn. or unfurn., cpts., dps., bltins, stove, refrig., & air cond., convenient to frwys., 20 min. to Norair, \$100-\$115 mo. Mar Vista, 391-7781. E  
**Apt**, unfurn., 3-bdrm., lower, cpts., dps., bltins, washer area, 1 1/2 baths, \$155. Hawthorne, 679-7618, 644-2887. E  
**Personals**  
**Piano Player** desires to become part of 3-5 piece dance band, work 1 to 2 nights a week. Buena Pk., 826-4379. L  
**Hunter** & outdoorsman wanted to share expenses on Central American jungle hunt for big game & fishing. Dec. 7 to Dec. 31. L.A., HO 3-5337. L

**Rides and Riders**  
**Rides Wanted**  
**7:30 a.m. — 4:15 p.m.**  
**Marine & Highland**, Manhattan Beach. L. Berg, Norair, ext. 2763, 545-1662.  
**Hawthorne Blvd. & 103rd; or Freeman & 103rd St.**, Inglewood. J. S. Moore, 672-2874.  
**Inglewood Ave. & 141st St.**, Hawthorne. H. Altieri, Norair, ext. 2331, 675-0795.  
**Fifth St. near Sepulveda**, Manhattan Beach. Janet Strickley, Norair, ext. 4451, 374-2725.  
**8 a.m. — 4:45 p.m.**  
**Torrance Blvd. & Catalina**, Redondo Bch. Patricia Hauser, Norair, exts. 2711, 2712, FR 6-3208.  
**Conejo Area**, Thousand Oaks. Share driving & traveling costs. Bert Sanger, Norair, ext. 1815, 495-3755.  
**Rides Offered**  
**8 a.m. — 4:45 p.m.**  
**Conejo Area**, Thousand Oaks. Share driving & traveling costs. Bert Sanger, Norair, ext. 1815, 495-3755.  
**Personals**  
We would like to thank everyone at Northrop for their kindness & sympathy which was so comforting to us, in our time of sorrow, at the loss of our daughter, Faye. MR. & MRS. IRWIN APPEL. L  
We wish to express our appreciation for the cards, flowers & contributions to our daughter, Karen, during her recent hospitalization following an accident. JOHN & CAROL TAYLOR. L  
**For Sale or Trade**  
**Van**, Ford Econoline, 1963, camper windows, 5-pass., s/belts, radio, \$995 or trade for sedan & cash. Hawthorne, 714-549-4324. M  
**Slide Rule**, Post, 12" Log Log Decitrig, w/ leather case & magnifier, identical 6" pocket rule & case, \$25 or trade on Colt .45 auto. pistol, Luger, or .22 auto. rifle. Manhattan Bch., 379-3487. M  
**Chevrolet**, 1964, 2-dr. sedan, low mileage, \$1,000 or trade for 1964 VW sedan. Gardena, DA 4-7623. M  
**Property**, in Joshua Tree, 5 1/2 acres, cabin, 14' x 18', \$7,500 or trade for camper, complete w/truck, 3/4 or 1 ton, 1965 or 1966. Hawthorne, OR 1-1660. M

NRC Clubs List Plans For Month

NRC activities for July will get under way with the Coin Club meeting Monday, July 10, at 7:30 p.m. in the NRC Clubhouse, Hawthorne. The gathering will feature "Display Night" with trophies awarded to winners. This will be the only July meeting, since the usual second meetings of the month have been cancelled for July and August. The Wanderers will hold a combined picnic-business meeting in Hawthorne Memorial Park at 7 p.m. on Wednesday, July 12. The park is at the corner of El Segundo Boulevard and Prairie Avenue. At the last session, the club decided a member missing three campouts or regular meetings will be dropped from the club mailing list. The Sports Car Club will sponsor a championship slalom July 16, on Terminal Island. The race is SCCSCC sanctioned and will count towards the yearly driver championship. Tech and registration will run from 8 a.m. to 2:30 p.m. with the first car out at 8:30 a.m. Trophies and dash plaques will be awarded. Cost is \$3.50 for a single entry and \$5.50 for married couples. The Archery Club will shoot away all summer, holding meetings each Thursday at 4:45 p.m. on the range at 120th Street and Van Ness, east of the parking lot. Assistance will be given to all beginners. The club also sponsors recreational shooting each noon hour on the range. Since Northrop's main concerns are contracts, Bridge Club members will follow suit with a few of their own every first and third Fridays and second and fourth Tuesdays at 7:30 p.m.



## Nortronics' Loomis — A Volunteer for Youth

"It's the most gratifying type of work I've ever done."

That's how Bill Loomis, a Nortronics Program Evaluation specialist, describes his volunteer activities for the Southwest Association for Retarded Children.



Mr. Loomis It was one of only two such awards given.

A friend who had a retarded daughter introduced Mr. Loomis to the group. He quickly became active, first as an advisor, because, in his words:

"I saw that there were so many things that had to be done for the children, and not enough interested people to do them."

As a financial advisor working with the SARC Workshop Committee and Exceptional Children's Foundation, a three-year study grant from the federal government was received for the purpose of determining whether the retarded were trainable.

"With the funds received from the grant," Mr. Loomis said, "we were able to establish a workshop

and begin training the older children to adapt to the world around them.

"So far we've been able to place about a dozen of them in full-time jobs, generally in small assembly or similar work."

The Torrance Unified School District operates a school for retarded children from grade school through high school age.

"But after they come out of school," Mr. Loomis said, "too often they're back where they started — nothing to do, and no way to really fit in. That's why we began the workshop."

No retarded person is ever too old for SARC. If a teenager proves to be unemployable and is too old for conventional schools, he may continue his training at the SARC workshop indefinitely.

Two full-time supervisors and a clerk staff the workshop. Eventually, officials hope to expand the facility to cut down on the waiting list, which has been growing steadily. Approximately 60 children use the facilities, but there are an estimated 300 retarded children in the South Bay, which SARC serves.

Mr. Loomis joined Northrop in February 1952, and has worked for both Norair and Nortronics. He began his career at Northrop on the F-89 project, has been in planning, engineering and manufacturing positions, and was transferred to Nortronics Palos Verdes from Norair in February of this year.

In 1965, he was elected to the SARC board of trustees, and was named chairman of the board by the other trustees. He served for nearly two years before being forced to resign due to a lack of time.

Still, he remains active as an advisor, and is budget chairman of the group's Long Range Planning Committee.

He finds the volunteer work gratifying "because you can see things come into being that will help — and do help — the children."

"As an example," he said, "I can see the tremendous development my friend's daughter has made in the past few years."

He hopes the group will eventually have adequate funds to provide training, psychiatric and medical care for all retarded children in the area.



COMPUTER EXHIBIT — Northrop Nortronics exhibited its NDC-1060 digital computer and Floated Lightweight Inertial Platform (FLIP) at the recent National Aerospace Electronics Conference (NAECON) in Dayton, Ohio. Roy Gregory (right), executive advisor for the Marketing department, discusses the FLIP ball with Colonel O. A. Wall, chief of Navigation and Guidance Division, U.S. Air Force Avionics Laboratory, Wright-Patterson AFB.

### ANNUAL EVENT

## NRC Schedules Day at Fair

The billing this year is "Northrop Fun Fair—all for fun and fun for all."

It is, of course, NRC's annual all-Northrop family picnic to be held from 10 a.m. to 6 p.m., August 20 at Los Angeles County Fairgrounds, Pomona.

Because 9,000 people turned out in 1966 for the last picnic, sponsoring NRC Councils at Norair and Nortronics Hawthorne-Palos Verdes are planning more and bigger events than ever before.

And everything is free, except for food and beverages.

Fun Fair plans call for additional entertainment in the form of two orchestras and numerous acts, a trip through an old gold mine and a bevy of prizes, plus additional rides.

The old favorites — games, miniature golf, soft drinks, ice cream and popcorn — will be available in increased quantities. And there will be open softball, badminton and volleyball action for those interested.

Paychecks distributed August

10 and 11 will contain a "family ticket" good for admission. At the gate each member of the incoming family will receive prize drawing tickets.

Personnel working full time at Northrop facilities for other firms may obtain their tickets through Personnel Activities offices.

Jim Johnson (Norair) and Paula Gardner (Nortronics) are the special events chairmen coordinating planning for the event. They promise additional information later.

But reserve that date—August 20—for Northrop's Fun Fair.

### Anaheim Picnic Date Announced

Nortronics Anaheim's NRC Council has set Sunday, August 27, as the date for a gala picnic to be held between 10:30 a.m. and 5 p.m. at Swiss Park, Duarte.

In the near future all Nortronics employees at Anaheim will receive a registration form to indicate their interest in taking part.

## Machinists Needed for Yoder Roll

Do you know someone who can operate a Yoder roll?

If you do and that individual is interested in joining Northrop Nortronics, you can pocket an extra \$100 for bringing the two together.

Nortronics needs experienced operators for the Yoder roll, a specialized sheet metal forming machine.

While the machine itself is unusual, the requirement for different kinds of personnel is not. There are more than 150 job openings, a majority in production activities, now at Anaheim and Hawthorne.

And Nortronics has made special arrangements to award employees who help fill these openings through a special referral award. It pays \$100.

## Northrop Files For \$30 Million Debenture Issue

Northrop Corporation last week filed a registration statement with the Securities and Exchange Commission, covering a new issue of \$30,000,000 of convertible subordinated debentures.

According to the registration statement, the proceeds will be used to reduce short-term bank borrowings which have been providing working capital for the company's increasing volume of business, particularly its participation in the Boeing 747 program.

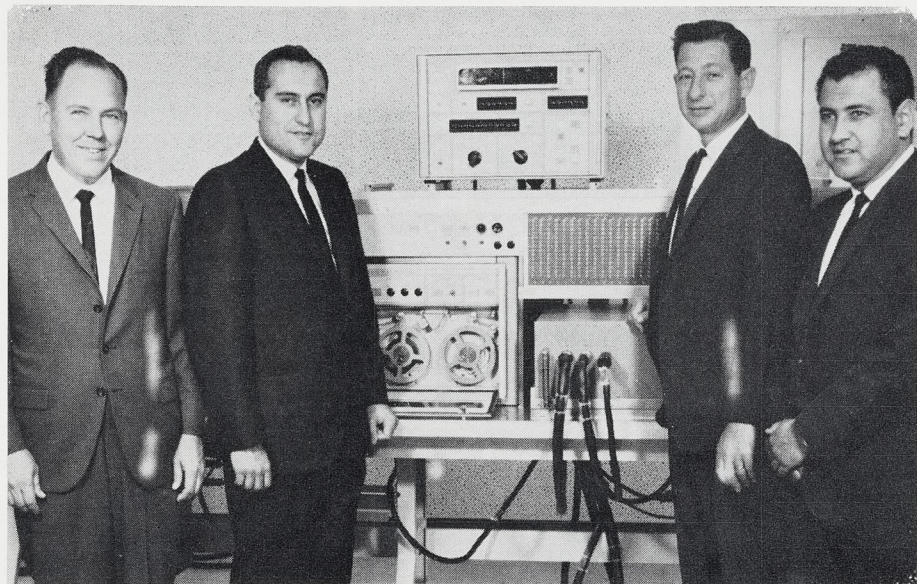
The proposed public offering of the debentures would be made through a group of underwriters.

### Bavarian Dance Set for July 15

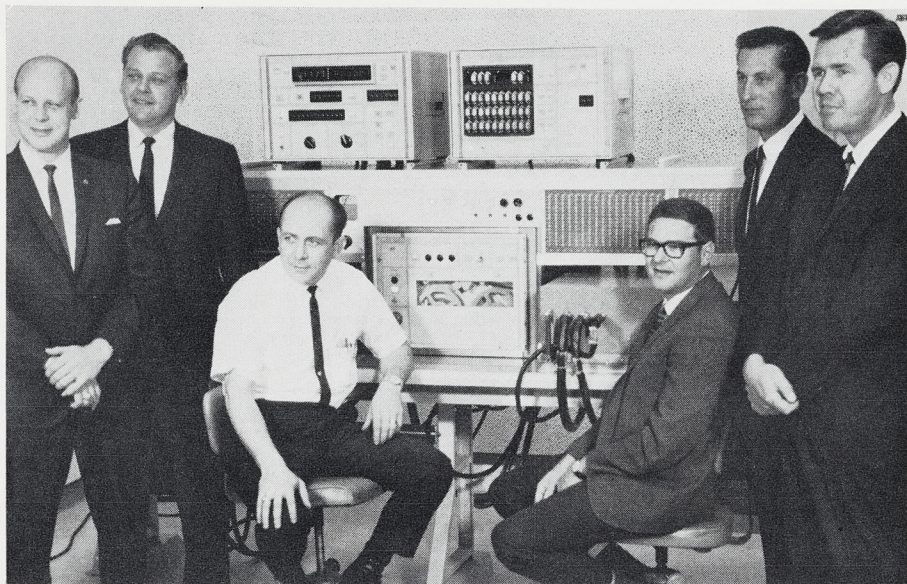
Over the past five years Nortronics Anaheim families have looked forward to an annual summer time treat—a Bavarian dance—held at NRC Clubhouse, Fullerton.

This year's event comes off July 15 from 9 p.m. to 1 a.m. Tickets sell for \$2 each and include admission and beverages. They are now available through Personnel Activities.

Gene Galante and his band will play for this event which encourages casual dress.



LABORATORY TESTS UNDER WAY—Nortronics Hawthorne has begun an intensive test program on initial components destined for use in the C-5 transport inertial Doppler navigation equipment. Shown with some of first units completed are men who have played important roles in bringing it to this stage. They are (from left) M. R. McElroy (Computer Logic), Morris Stein (Memory Development), E. C. Powell (Mechanical Design) and Lou Colombano (Circuit Development).



PROUD OF PROGRESS MADE in bringing initial C-5 transport navigation system components through development and into test program are some of program's key contributors. They are shown with initial test units. They are (from left) Tom Daggett (Systems Support Equipment), Fred Shockley, (Evaluation and Integration), Jay Albrecht (Systems Support Equipment), Ed Klein (Computer Development), Bob Sanders (Computer Engineering Evaluation and Test) and Bert Swearingen (Advanced Computer Systems).



# NORTHROP NEWS

NORTHROP NORTRONICS

Published biweekly by Northrop Corporation, Beverly Hills, California

Vol. 25, No. 14

July 19, 1967



*CRITICAL DESIGN REVIEW for C-5 transport Aerospace Ground Equipment is shown in progress last month at Nortronics Palos Verdes. Taking part are Air Force, Lockheed Georgia and Nortronics representatives. Lockheed's George Crain is shown conducting a part of*

*the session. Day-long session was concluded successfully without a single "Squawk Sheet" being written. Review led to establishment of production baseline configuration for three items, two test sets and a programmer.*

## Friedman Earns Doctorate In Graduate Study Program

George J. Friedman received a doctor of philosophy (in engineering) degree last month from the University of California at Los Angeles.

Attainment of this highest of academic honors was the culmination of a long, hard quest for Dr. Friedman and a first for Northrop Nortronics.

Dr. Friedman is chief of Systems Engineering for Nortronics. He is also the division's first participant in the Northrop Graduate Study Program to earn his doctorate.

The long quest leading to his present academic standing began for Dr. Friedman almost two decades ago.

In 1949 he received a B.S. in engineering from the University of California at Berkeley and in 1956 an M.S. in engineering from UCLA.

Between the two degrees there was time out for service with the U.S. Army during the Korean conflict.

A remarkable aspect of Dr. Friedman's accomplishments is that he has worked full-time since 1953 while continuing his studies in evening classes.

Only since 1963, when the Northrop Graduate Study Program made it possible for him to take time off to attend day classes and to perform the required research, has he been away from work for study purposes. Even

during this latter time Dr. Friedman has carried his full work load with Nortronics.

(One phase of the Northrop Graduate Study Program enables selected individuals to take up to 156 hours of time off each 12-month period for graduate study without loss of pay.)

By conservative estimate, Dr. Friedman reasons he has spent something like 10,000 hours in evening study efforts to gain his master and doctorate degrees.

"I have always kept my main objectives in mind while attempting to take courses that would keep me abreast of rapidly advancing technologies over the years," Dr. Friedman said.

Wasn't it difficult to maintain enthusiasm through the years?

"You might say that. It was hard to give up time I could have spent with my growing family," Dr. Friedman said. "But if you really want something bad enough, there is a way."

Dr. Friedman and his wife, Ruthanne, have three sons.



Dr. Friedman

## INERTIAL PLATFORM

### Study Contract Awarded

Feasibility of a small ball-shaped inertial platform for missile guidance will be studied by Northrop Corporation under a \$1,247,000 contract.

Two engineering models will

be developed under the contract, awarded jointly by the Flight Dynamics Laboratory and Avionics Laboratory of Air Force Systems Command.

Northrop Nortronics will perform the work at its Precision Products Department at Norwood, Massachusetts, and at its Hawthorne facility.

Unlike conventional inertial platforms which use complex gimbal systems, the proposed platform will be contained in a four-inch diameter sphere that floats on a thin film of fluid. The Northrop-developed floated sphere concept is currently being applied on a larger scale to the navigation system Nortronics is building for the Air Force C-5A transport.

## Bands Named for Picnic

Two bands, each with an individual sound, have been booked for the NRC "Fun Fair" set for August 27 at Pomona.

"The Majestics," featuring a smooth beat, will play from 10 a.m. to 2 p.m. Then the "Chapter Six" will rock it out from 2 to 6 p.m.

The big family picnic is being sponsored by NRC Councils at Norair and Nortronics Hawthorne-Palos Verdes.

## PITCHER, CATCHER

### Angels, Tigers Pick Pair

Two sons of Northrop Nortronics employees have been in the news recently as professional baseball clubs conducted their annual post-school year activities to recruit young hopefuls.

One youngster has signed for a bonus "in excess of \$15,000." He is Michael Murray, a catcher, the son of Ken Murray (Rotational Inventory) and Una Murray (Shipping) of Anaheim.

The second, Bruce Harkey, was drafted by the California Angels and is in the process of negotiations. His mother, Rebecca, is in Inspection at Anaheim.

Michael Murray won all-Freeway League honors at Fullerton High School and completed one year of play with Cypress Junior College. He reported to Erie, Pennsylvania, and the Detroit Tigers' "Rookie League," but in just five days was dispatched to the Class A Statesville team in the

Western Carolina League. He is now playing regularly there.

Mr. Murray has been in organized baseball since he was eight years old, competing in junior programs, winter leagues and scholastic leagues. He hit .300 during his final year at Fullerton High.

Bruce Harkey is a right-handed pitcher who posted a 7-3 win-loss record as a senior at La Habra High. (Two of his three losses were by 1-0 scores.) His earned run average was an interesting .087 for the year.

Mr. Harkey also earned all-Freeway League honors as well as honorable mention on the all-Orange County Team. His contract talks to date indicate he will be sent to the Class AA El Paso, Texas, Angel farm club. He is also a veteran of youth and scholastic play in Orange County baseball activities.

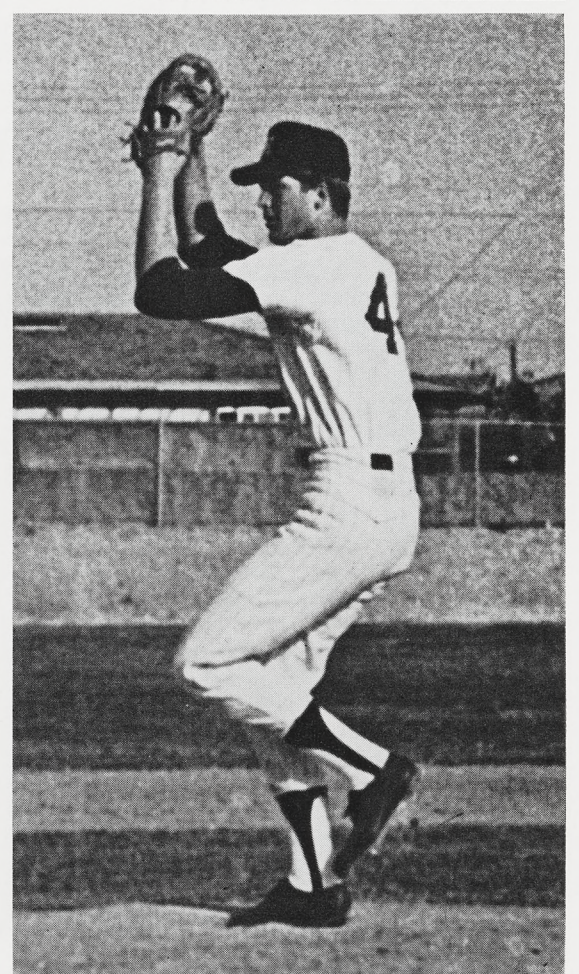
## Kessler Installed by Quality Control Group

David Kessler, supervisor of Reliability at Northrop Anaheim, was installed last month as chairman of the Orange Empire Section, American Society for Quality Control.

Mr. Kessler has been a member of this group since 1961 and served for the past year as vice chairman.



*FUTURE STARS?—Michael Murray (left) and Bruce Harkey, both sons of Northrop Nortronics employees, have been selected by major league baseball clubs in the annual player draft. Mr. Murray, now in the Detroit Tiger organi-*



*zation, is a catcher and signed a contract calling for a bonus of more than \$15,000. Mr. Harkey, a pitcher, is still negotiating with the California Angels. Mr. Murray hit .300 and Mr. Harkey posted a 7-3 win-loss record.*





**SUMMER RESEARCH PROGRAM** — Lt. General Thomas S. Moorman (seated center), superintendent of the Air Force Academy, talks with Dr. Donald A. Hicks, manager of the Northrop Corporate Laboratories. Participating in the Academy's Summer Research Program at

Northrop will be (from left) Charles V. Duncan, Maurice E. Edlund, Edward A. Greene, Craig C. Squier, John B. Tedor, William B. Wood and (seated right) Lieutenant Gary G. Peterson.

## Academy Cadets Begin Annual Study Program

Six Air Force Academy cadets and one recent graduate are studying at the Northrop Corporate Laboratories this summer as part of the Academy's annual Summer Research Program.

Accompanied by Lt. General Thomas S. Moorman, superintendent of the Academy, they visited the Corporate Laboratories on July 6, where they were introduced to Dr. Donald A. Hicks, Corporate Research vice president and manager of the Corporate Laboratories.

This is the third consecutive year that a group of cadets has studied at Northrop. Dr. Hicks has been coordinator of the program each year.

At the July 6 meeting, General Moorman was briefed on Northrop capabilities by Richard E. Horner, Corporate senior vice president-Technical; by Dr. Hicks; by Dr. W. E. Crandall, chief scientist; and by G. W. Soules, L. A. Riley, R. E. Wengler, J. P. Raymond and Dr. O. L. Curtis, members of the senior technical staff of the Corporate Laboratories.

Accompanying the general and

the cadets were Captain Larry Means, General Moorman's aide; Captain John Ahearne of the Academy staff; and Major Jack Cook, Captain Anthony Baggiano and Captain John Johnston of the Air Force Space Systems Division.

Also representing Northrop at the meeting was John Alison, Corporate vice president of Customer Relations.

The cadets—and the programs they will study during their six-week stay at Northrop—are:

Charles V. Duncan, "Radiation Effects in Dielectrics"; Maurice E. Edlund, "Improved Shock Wave Diagnostics"; Edward A. Greene, "Computer-aided Integrated Circuit Design."

Craig C. Squier, "Special Purpose Computer"; John B. Tedor, "Dynamic Response of a Ball Bearing to Rapid Heating"; William B. Wood, "Radiation Damage Study of Bulk Semiconductor Material"; and Gary G. Peterson, "Hardened Electronics."

Lieutenant Peterson is a 1967 graduate of the Academy. The others are first classmen (seniors). All are science majors.

### IN WASHINGTON

## Four Attend AIAA Meeting

Four Norair employees will present technical papers to the American Institute of Aeronautics and Astronautics (AIAA) Propulsion Joint Specialist Conference, being held this week in Washington, D.C.

Rahim Lavi will deliver his paper, "Parametric Investigation of VTOL Proximity Effects." Mr. Lavi is an engineering specialist in the Aerodynamics and Propulsion Research and Technology group.

His report includes parametric data and conclusions on gas ingestion and jet effects experi-

enced by jet-powered VTOL configurations.

Ronald Osmon, senior engineer, will present a paper of importance to inlet designers entitled, "Improved Methods of Spillage Drag Prediction for Two-Dimensional Supersonic Inlets."

Sidney Thurston, project chief in Advanced Aircraft Systems, will conduct a session centered around, "Ducted Propellers for High-Speed Underwater Propulsion," a paper co-authored by Mr. Thurston and Michael Evanbar, a senior engineer.

This paper considers the feasibility of a subcavitating propeller in a diffusing base-ventilated or supercavitating duct for operation within a specified speed-performance gap.

"Heat Transfer in Wakes" is the title of a technical paper authored by D. B. Adarkar of Norair which is scheduled to be presented to the Tenth Midwestern Mechanics Conference August 21-23.

(See AIAA, page 3)

## Dorsey To Be Pacific Area Manager

Northrop Corporation has named James A. Dorsey, assistant Corporate director of Mar-



Mr. Dorsey

keting Operations, to become manager of the company's Pacific Area Office in Honolulu.

Mr. Dorsey succeeds A. R. DeBolt who is resigning from the company to enter private business in Djakarta, Indonesia.

As a career Marine Corps officer and naval aviator, Mr. Dorsey's assignments included several years in Hawaii, as well as Korea, Japan, Okinawa, the Philippines, China, and Australia. He joined Northrop five years ago.

As manager of the Northrop field office in Honolulu, Mr. Dorsey will represent Northrop's numerous and diversified divisions and subsidiaries in the Pacific.

## Colonel Seeks Ham Radio Conversation

Lieutenant Colonel James Sullivan, USAF, would like very much to chat with Northrop personnel.

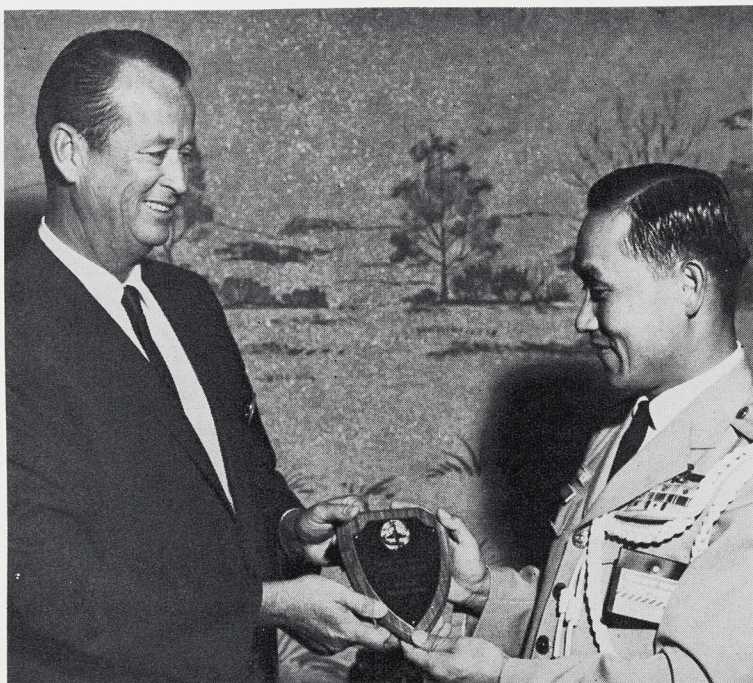
There's one small hitch, however.

The Colonel is stationed at Kwang Ju in the Republic of South Korea. He's director of Maintenance for the Air Force Advisory Group working with the ROK Air Force which flies the Northrop-built F-5 tactical fighter.

Colonel Sullivan is also an amateur radio operator with his own call letters (HL9KP) and station there. He hopes to use this means of talking with Northrop "hams."

Erv Teare, Northrop technical representative at Kwang Ju, passes on this information:

Colonel Sullivan operates a Galaxy 300-100 watts rig with two element quad at 40 feet. California stations begin coming in around 1100 GMT. He normally listens between 14.2 and 14.25 megacycles from 1200 to 1400 GMT.



**CHECKOUT PLAQUE** — F. W. Lloyd, Corporate vice president and general manager of Norair, presents Colonel Ma Chono-In of the Republic of Korea Air Force a plaque for his flight checkout of Northrop's F-5 fighter. Colonel Ma, air attache to the Korean embassy in Washington, D.C., received the award at a June 16 luncheon for a group of touring ROKAF officers.

### BY VALUE ENGINEERS

## Savings Honor Presented

Northrop has received special recognition from the Society of American Value Engineers (SAVE) for its activities in the submittals of Value Engineering Change Proposals (VECP's).

Milt Kuska, Norair vice president of Engineering, accepted a plaque for Thomas V. Jones, Northrop president, citing Northrop's efforts at a ceremony at the Ambassador Hotel in Los Angeles.

The citation was in conjunction with Department of Defense recognition of 28 major contractors who submitted one or more VECP's resulting in savings of \$50,000 or more each. Northrop is one of the five contractors based in the Southern California area to be honored.

In January, the Department of Defense estimated a total of \$495 million had been accrued

in audited savings through the use of Value Engineering techniques. Much of this amount saved was attributed to the efforts and interest of defense contractors such as Northrop.

Northrop's contribution to the Value Engineering savings has been led by Norair Division which to date has had 17 separate VECP's approved for an estimated total savings in excess of \$1.3 million. In addition to this, USAF will save \$1.7 million in collateral field savings.

### Activities Scheduled

The Gun Club will assemble tomorrow night at 7:30 p.m. in the auxiliary room of the NRC Clubhouse, Hawthorne.

"Challenge I," an invitational slot car race, will be conducted by the Slot Car Club Friday, at 815 West Arbor Vitae, Inglewood.



**ROKAF INSIGNIA** — Lt. General Chang Chi-Ryang, chief of staff of the Republic of Korea Air Force, hands Thomas V. Jones, Northrop president and chairman of the board, a plaque bearing the ROKAF insignia at a June 16 luncheon. The Korean Air Force has been flying the F-5 Freedom Fighter for over a year as an important element in its air inventory.



Classified

Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private businesses are not accepted. The Northrop News reserves the right to edit or omit ads. Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 62. Ads are limited to one item and one ad per person each issue. Deadline is noon Wednesday, one week before publication.

For Sale
<b>Ford</b> , 1962 Country Squire, full power, air cond., \$700. Anaheim, 772-2547. A
<b>Engine</b> , 2.5 h.p. B&S, 4-cy., gasoline, needs a little work, \$20. Rolling Hills Ests., FR 5-8536. A
<b>Pool Table</b> , \$50. Wilmington, 473-9873. A
<b>Organ</b> , Lowrey, elec., Holiday model w/ Leslie speaker, \$500. L.A., PL 9-5991. A
<b>Home</b> , custom, 2,300 sq. ft. ranch style, 4-bdrm., 2½ baths, family rm., sep. dining area, h/wood flrs., \$38,000. Garden Grove, 714-544-8916. A
<b>Ford</b> , 1959 4-dr. Galaxie 500, runs good, \$295. Hawthorne, OS 5-7740. A
<b>Travel Trailer</b> , 17' Shasta, fully self-cont., sleeps 6, butane stove, refrig., lots of extras, \$950. Gardena, DA 4-2816. A
<b>Home</b> , 3-bdrm., 1½ bath, fenced backyard, dble. attached gar., 15% down, will carry 2nd trust deed, \$23,950. Torrance, TE 5-8687. A
<b>Dining Room Set</b> , distressed maple, 5 captain's chairs, \$100. Torrance, 329-9021. A
<b>Razor</b> , Norelco floating head, w/case, \$.7. Inglewood, OR 1-6692. A
<b>Refrigerator</b> , Norcold, over 1 cu. ft. vol., \$50. Torrance, 328-5655. A
<b>Studio Couch</b> , 3' x 6', 2 cushions, makes into a dble. bed, \$25. Hawthorne, OS 6-3792. A
<b>House</b> , 2-bdrm., 2 blocks from Norair, lge. patio, blockwall rear fence, attached gar., cpts., dps., natural cabinets, many deluxe bltin features, \$1,000 dn., \$19,250. Hawthorne, 644-4039. A
<b>Volkswagen</b> , 1962 Microbus, new paint, \$895. Redondo Bch., 379-7197. A
<b>House</b> , 4-bdrm., 2 baths, cpts., dps., \$28,000. San Pedro, 831-0536. A
<b>Motorcycle</b> , BSA, 175 cc, 1,900 miles, \$295. Hawthorne, 672-7552. A
<b>Violin</b> , 150 yrs. old, German made, \$150. L.A., 677-0471. A
<b>Ski Boat</b> , 14' fiberglass Runabout, w/canopy, 1955 model, 60 h.p. Evinrude, all elec. motor, custom-made trailer, skiing equipment & extras, \$1,100. Gardena, 644-4137. A
<b>Kittens</b> , Siamese, born June 18, will be ready by July 30 to Aug. 6, \$15 ea. Long Bch., 438-9700. A
<b>Home</b> , 2-bdrm., on 1 acre lot, 18' x 32' gar. w/sleeping rm. & ¾ bath, fenced, 1 yr. old, \$16,500. Hesperia, 714-244-9042. A
<b>Chevrolet</b> , 1956, 8 cyl., auto., radio, \$145. P.V. Pen., 377-5936. A
<b>Living Room Suite</b> , 2 pc. sectional & wing back chair, provincial, orange, \$100. Torrance, 323-2273. A
<b>Dodge</b> , 1960 Phoenix, 383 V-8, auto. r/h, 4-dr. h/top, 45,500 actual miles, \$450. Torrance, FA 8-3202. A
<b>Chairs</b> , 2 occasional or patio, wrought iron, black & white Naugahyde, \$4 ea. Hawthorne, 679-6365. A
<b>Motorcycle</b> , 1965 Yamaha Sportsman, 80 cc, custom-made, 4140 stl. tubing frame, chrome fenders, polished cases on eng., new paint, \$200. Box 1401. A
<b>TV</b> , Packard Bell, 23" b/w, \$69.95. Gardena, 323-0134. A
<b>House</b> , 3-bdrm., 1¾ bath, bitins, near Torrance schools, 10% down, \$27,500. Hawthorne, 371-3860. A
<b>Lawnmower</b> , power, 18", 6-blade reel, recoil starter belt & chain drive, 4 cy. eng. w/ recoil starter, \$35. Hawthorne, OS 5-9789. A
<b>Ironrite</b> , auto. Whirlpool, & washing machine, G.E., auto., \$125 or will sell sep. Manhattan Bch., 358-0712, 358-4419. A
<b>Ford</b> , 1951, \$75. Hawthorne, 676-8676. A
<b>Home</b> , G.I. resale, 3-bdrm. & family rm., bitins, lge. fenced yard, dps., cpts., fireplace, bar, \$25,00. Torrance, TE 0-3792. A
<b>T-Bird</b> , 1955, new paint & uphol., many extras, soft & h/tops, stick shift, \$1,200. Pac. Palisades, GL 4-5420. A
<b>Hi-Fi Set</b> , Harman-Kardon AM-FM tuner, Heathkit preamp., 35 watt theater model Ampex design amplifier, University coaxial speaker & finished cabinet, \$125. L.A., 477-7741. A
<b>Home</b> , 4-bdrm., 2 baths, family rm., 2-story, on corner lot, cpts., dps., fireplace, fences, patios, sprinklers, 3-car gar., \$31,500. La Palma, 714-827-1958. A
<b>Freezer</b> , 18', no defrost, \$200. Hawthorne, OS 9-5772. A
<b>Surfboard</b> , 9' 10" Dewey Weber, car rack, medium sized surf jacket, sold as a unit only, \$95. Inglewood, PL 5-6830. A
<b>Turntable</b> , Garrard 60 MK II auto., base, Pickering magnetic cartridge, in factory sealed cartons, \$65. L.A., 670-6084. A
<b>Chevrolet</b> , 1964 S.S., V-8, air cond., auto. trans., p/s, p/b, 21,000 miles, \$1,800. Box 1402. A

For Sale
<b>Truck</b> , 1961 ½-ton Chevrolet, stepside, \$600. Lakewood, HA 9-7772. A
<b>Bed-Divan</b> , high back, reclines, w/ottoman, \$75. Hawthorne, 644-1337. A
<b>Cabin</b> , lake front, 2 yrs. old, winterized, pvt. dock, Bass Lake, \$39,500. Box 1403. A
<b>Coffee Table</b> , maple, \$20. Manhattan Bch., FR 2-0901. A
<b>Windows</b> , for Austin Healey 100-4 & 3000, up to 1963, \$25. Box 1404. A
<b>Air Conditioner</b> , Emerson, window size, \$50. L.A., 870-7894. A
<b>Chevrolet</b> , 1956 Bel Air, 2-dr. sedan, \$300. Hawthorne, OS 6-9874. A
<b>Racing Bicycle</b> , French Lygie, complete Campagnolo equipment, \$80. Manhattan Bch., 376-5139. A
<b>Bicycles</b> , 2, girl's, \$25. Torrance, FA 8-6863. A
<b>Desk</b> , maple, 18½" wide & 36½" long, center drwr. w/3 side drwrs., incl. file-size drwr., \$25. Hermosa Bch., 374-0178. A
<b>Sofa-Bed</b> , 6', beige & brown flowered, cost \$250; \$110. L.A., 754-1624. A
<b>Dinette Set</b> , formica, 4 white vinyl chairs, \$35. L.A., OR 0-6896. A
<b>Refrigerator</b> , General Electric, freezer comp. across top, \$75. Torrance, DA 9-3000. A
<b>Air Conditioner</b> , Fedders, window mount, 11,000 b.t.u. for 110 volts, cost \$234; \$175. Long Bch., GA 4-4863. A
<b>Honda</b> , S-90, 1966, 5,000 miles, \$250. Torrance, 375-6634. A
<b>Horn</b> , folded expedential, w/50 watt W.E. driver, \$35. Redondo Bch., 375-6994. A
<b>TV</b> , Hoffman, mahogany console, has stereo hookup & UHF, \$85. Harbor City, 326-5727. A
<b>Boat</b> , fiberglass, w/car rack, 12' 57" beam, \$150. L.A., 645-1621. A
<b>Surfboard</b> , Jacobs, 8', \$25. Manhattan Bch., 372-6436. A
<b>Pontiac</b> , 1965, Grand Prix, stick, p/s, new tires, 27,000 miles, \$2,200. Inglewood, 671-4933. A
<b>Bicycle</b> , boy's & girl's, \$12. Torrance, FA 8-3306. A
<b>1st Trust Deed</b> , \$6,000, on beach lot, pays 6% at \$70 mo. for 10 years, \$5,000. Manhattan Bch., FR 4-3359. A
<b>Truck</b> , 1960 ½-ton Chevrolet, 8' bed, \$550. Hawthorne, 676-5921. A
<b>T-Bird</b> , 1956, 2 tops, 312 eng., new paint, custom trailer hitch, other extras, eng. & trans. rebuilt recently, \$1,595. Gardena, 329-6673. A
<b>Dodge</b> , 1962, Lancer, r/h, good tires, stick shift, needs a little work, \$125. Box 1405. A
<b>Motorcycle</b> , Suzuki, 1966, 150 S32-2, \$325. P.V., 378-1561. A
<b>Pups</b> , mostly poodle, 5 wks. old, \$5 ea. Manhattan Bch., 374-5851. A
<b>Business Desk</b> , walnut, 3 drwrs. on ea. side w/center drwr., top 30" x 60", \$45. Westminster, 714-897-5874. A
<b>Honda</b> , 1964 150, 450 actual miles, \$375. Inglewood, 672-1008. A
<b>Battery</b> , automobile, 12 volt, Delco Model G65, long-type, 36 mos. guaranty, used 2½ mos., orig. cost \$26; \$20. Gardena, 329-3476. A
<b>Pontiac</b> , 1963 Catalina h/top, 1 owner, auto., r/h, p/s, p/b, air cond., \$1,395. Long Bch., 421-7038. A
<b>Table Tops</b> , 2 18" square onyx, never used, \$15 pair or sell separately. San Pedro, TE 3-2512. A
<b>Honda 305</b> , Superhawk 1965, new eng., scrambler bars, pipes, tires, \$350. Temple City, 286-7889. A
<b>Motor Scooter</b> , Vespa 150 cc, 1966, low mileage, lots of extras, \$375. Hawthorne, 675-7200. A
<b>Luggage Rack</b> , fits any V.W., inc. canvas cover, \$35. Torrance, FR 1-3769. A
<b>Surfboard</b> , Jacobs, 9' 6", \$35. P.V., FR 7-4943. A
<b>Vacuum Cleaner</b> , Electrolux, w/all attachments, \$15. L.A., 664-7943. A
<b>Headboard</b> , maple, king size, \$50. Hawthorne, OS 5-1064. A
<b>Refrigerator</b> , RCA Whirlpool, 13 cu. ft., single door, 5 yrs. old, \$80. Westminster, 714-8-2-5801. A
<b>Table</b> , dropleaf, oval, about 26" x 40", \$20. W.L.A., 836-5575. A
<b>House</b> , 3-bdrm., tiled bath, lge. kitchen, patio, gar., near schools, park & fwys., CRV, \$18,300. Gardena, 323-6622. A
<b>Ford</b> , 1959 2-dr., \$200. Inglewood, PL 5-5584. A
<b>Self-Tutoring Course</b> , Grolier, in arithmetic lessons, electricity & machine, \$10. Hawthorne, OS 6-8331. A
<b>Station Wagon</b> , 1959 Plymouth, r/h, auto., \$2.5. Gardena, DA 4-0649. A
<b>Mustang</b> , 1967 Shelby, GT 500, 428 cu. in. Le Mans eng., auto., 2,500 miles, take over \$96 mo. pymts., \$2,700. Hawthorne, OS 5-1365. A
<b>Mercury</b> , 1955 2-dr. h/top, \$99. L.A., 757-6536. A
<b>Chevrolet</b> , 1964 Impala, 2-dr., auto., \$1,100. Oxnard, 486-6497. A
<b>Horses</b> , sorrel mare w/yearling filly from Appy Sire (papers) & child's pinto mare, saddle & tack avail., \$500. Sepulveda, 894-0312. A
<b>Bedroom Set</b> , oak bookshelf-type headboard & frame, twin size, never used, \$35. Downey, 865-3768. A
<b>Pool</b> , Doughboy, alum. frame, 12' x 36', ½ h.p. h.d. filter, auto. skimmer, vacuum cleaner, ladder, cover, test kit, \$65. Torrance, 323-4257. A

For Sale
<b>Golf Bag</b> , man's, Arnold Palmer step-down professional model, black vinyl w/matching head covers, 4 mos. old, cost \$50; \$35. Torrance, 326-1382. A
<b>Plymouth</b> , 1958, needs eng. work, \$65. Gardena, 644-1485. A
<b>Scuba Regulator</b> , U.S. divers' 2 hose, \$15. Box 1406. A
<b>Cabin Cruiser</b> , 25', fiberglass o/plywood hull, mahogany cabin, radio-telephone & RDF, 185 h.p. inboard, \$3,000. Miraleste, 831-5615. A
<b>Boat</b> , 15' Chris-Craft, 35 h.p. Evinrude motor, elec. start, trailer, many extras, \$595. Gardena, 327-9635. A
<b>Home</b> , & 11 units, inc. 2,000 sq. ft. owner's unit, 9 units furn., owner carry 2nd equal to dn. pymnt., total income over \$20,000, \$148,000. Hollywood, HO 4-1084. A
<b>Acreage</b> , 5-acre ranch or cabin site, on good road, north of Rosamond, \$34.50 dn. & \$34.50 mo., \$3,450. Torrance, FR 8-1026. A
<b>House</b> , 3-bdrm., inc. lge. master bdrm., family rm., swim pool, 1st mortgage commitment of 80%, \$45,000. Rolling Hills Ests., 375-8920. A
<b>Tape Recorder</b> , Pentron PR65 President, 4-track stereo record & playback, \$65. Los Alamitos, 430-7388. A
<b>Honda</b> , 1963 250 Scrambler, \$425.50. Lawndale, 675-8948. A
<b>Mountain Cabin</b> on stream, wooded, view, 2-bdrm., furn., lge. porch, Gov't lease, \$6,000. Inglewood, PL 4-5358. A
<b>Outboard Motor</b> , 35 h.p. Evinrude manual, controls, gas tank, extra prop., \$125. Rolling Hills, FR 7-1404. A
<b>Crib</b> , & mattress, Edison, \$25. Playa del Rey, 823-3947. A
<b>Piano</b> , upright, antique white, \$90. Inglewood, 677-6375. A
<b>Cadillac</b> , 1962 convt., air cond., full power, b/seats, \$1,495. Torrance, FR 5-8804. A
<b>House</b> , 4-bdrm., family rm., 2½ baths, 1 acre, horses OK, near Northrop Ventura, \$35,000. Somis, 805-482-1186. A
<b>Pontiac</b> , 1962, custom h/top sedan, r/h, p/b, p/s, mag wheels w/new tires, 53,000 actual miles, \$1,200. Manhattan Bch., 644-6232, 376-2122. A
<b>Aquarium</b> , 15-gal. Metaframe w/guar. motor filter, auto. heater, hood & bulbs, thermo., other access., 3 mos. old, \$25 or sell separately. Gardena, 327-4346. A
<b>Band Saw</b> , Craftsman, on bench, ¼ h.p. motor, \$65. Inglewood, OR 2-4582. A
<b>Sailboat</b> , Lido 14, 2 sets sails, trailer & cover, \$950. Rolling Hills Ests., FR 8-2190. A
<b>Mobile Home</b> , 8x35 alum. awning, completely furn., new bitins, \$1,995. Lawndale, 644-2106. A
<b>Range</b> , coppertone, 3 yrs. old, oven, broiler, timer & storage, \$60. Playa del Rey, 823-3870. A
<b>Oldsmobile</b> , 1964 Super 88, air cond., p/ windows, 4-dr. h/top, \$1,500 or submit bid. Credit Union, ext. 1117. A
<b>Kitchen Cabinet</b> , sink w/hardware, metal, \$40 or sell separately. Hawthorne, 679-7873. A
<b>Piano</b> , Wurlitzer portable elec., 2 yrs. old, cost \$400; \$280. L.A., AX 3-2161. A
<b>Gun</b> , mod. 29 S&W .44 mag., \$125. Hermosa Bch., FR 4-4792. A
<b>Land</b> , 2.5 acres, Antelope Valley, west of Rosamond, \$17.50 dn., \$17.50 mo., \$1,750. Long Bch., 438-8331. A
<b>Stereo System</b> , for auto, transistor tape deck, 4 6" speakers, 6 volt to 12 volt transformer, 1967 Muntz model M70, 2 tapes, bracketry, \$50. Pac. Pal., GL 4-5985. A
<b>Corvair</b> , 1962 4-dr. Monza, auto., 45,000 miles, \$650. Redondo Bch., 370-7130. A
<b>House</b> , 4-bdrm., 2 baths, 2-car gar., 5 yrs. old, w/w cpts., h/wood floors, fenced yard, bltin range, furn., \$24,500. Hermosa Bch., OS 5-6772. A
<b>Chevrolet</b> , 1964 S.S., V-8, air, auto., power, vibrasonic, \$1,695. Hawthorne, 644-4729. A
<b>Chevrolet</b> , 1958 Impala, r/h, 348 eng., \$200. Redondo Bch., 374-2433. A
<b>Stove</b> , apt. size, 4 burner w/oven, \$25. Gardena, OS 5-2159. A
<b>Motorcycle</b> , 1965, 650 cc Bonneville, \$850. Gardena, 679-3927. A
<b>Hood</b> for 1956 Chevrolet, other auto parts, \$10. Huntington Echn., 897-3818. A
<b>Volkswagen</b> , 1966 sedan, sunroof, new AM-FM radio, many extras, \$1,600. Lawndale, OS 6-5425. A
<b>Buick</b> , 1956 Century, auto. trans., r/h, \$175. Torrance, 320-7482. A
<b>Washer</b> , dryer, \$15 ea., other misc. household items. Gardena, DA 9-7890. A
<b>Refrigerator</b> , for camper, 3-way comb., 110 volt, 12 volt, & butane, \$125. Rolling Hills, FR 7-3487. A
<b>Wheel Discs</b> , set, chrome, for Corvair, \$5. Inglewood, 758-9182. A
<b>Chevrolet</b> , 1956 convt., V-8, 3-spd., floor shift, r/h, needs front brakes, \$135. Torrance, 320-7487. A
Wanted to Buy
<b>Trunk</b> , large, in good condition, w/drawers on 1 side & rod on the other. Torrance, 325-8211. B
<b>Magazine</b> , Arizona Highways, Feb. 1952 issue, L.A., OR 7-5273. B
<b>Rifle</b> , .22 caliber, bolt action, & rifle scope. L.A., HO 3-5337. B
<b>Parts</b> for MG-TD, 1952. Whittier, OX 3-4117. A

Free (To Be Given Away)
<b>Kittens</b> . Hawthorne, 676-2803. D
Rentals Offered
<b>Apt.</b> , beach front, furn., summer rental, \$100 wk. Redondo Bch., 372-0332. E
<b>Apt</b> , cpts., dps., bltin, all electric, closed gar., 5 min. to Nortronics P.V., 15 min. to Norair, 1-bdrm., furn., \$105; 2-bdrm., unfurn., \$125. Torrance, 375-2091, 375-9397. E
<b>Cabin</b> , Big Bear Lake, sleeps 7 to 9, \$18 w/ end; \$50 wk. Bellflower, TO 7-0662. E
<b>Apt</b> , 2-bdrm., furn., cpts., dps., bitins, play yard, 1 child OK, near Norair, avail. Aug. 1, \$145. mo. Hawthorne, 679-1358. E
<b>Vacation Cabins</b> , Lake Gregory & Crestline, sleeps 6, make reservations now to Sept., \$60 wk. Venice, EX 1-2040. E
<b>Studio Apt</b> , 2-bdrm., 2½ bath, pvt. deck, sub. gar., cpts., dps., elec. heat, d/washer, near San Diego Fwy., adults, lease, \$185. Inglewood, 673-0615. E
<b>Apt</b> , deluxe, 3-bdrm., 2 baths, near schools, cpts. & dps., bltins, closed gar., pvt. patio, near Northrop, \$170. Hawthorne, OS 5-7938. E
<b>Apt</b> , 2-bdrm., unfurn., cpts., dps., bltins, closed gar., hobby shop, laundry, pvt. balcony, \$125 mo. Torrance, FR 5-0867. E
<b>Resort Home</b> , 3-bdrm., 2 baths, near Lake Arrowhead, furn., \$100 wk. Gardena, 532-6109. E
Rentals Wanted
<b>Apt</b> , furn., 2 or 3-bdrm., for high-level exec. & family, for 1 week only 3rd week in August. Sherman Oaks, ST 8-9709. F
Personals
<b>We</b> want to thank all those at Northrop who were so kind & gracious in our time of grief over our son & brother who was killed in Vietnam June 17. God bless each & every one of you. GRACE WEIKAL (MOTHER); JOYCE HYLES (SISTER). L
<b>We wish</b> to thank all our friends at Northrop for their expressions of sympathy in the loss of our husband & father, Wm. D. McKay. FAMILY OF W. D. MCKAY. L
<b>On behalf</b> of Jane, Kim & myself, I would like to express sincerest thanks to the employees of both Norair & Nortronics, who so generously contributed to us at the time of our mother's death. We are enjoying our new home in Canada but do miss all our friends in "good old California" & hope sometime before long we may return for a visit. KIM, JANE & NAN EGBERT. L
<b>Looking</b> for someone in La Mirada or Norwalk area traveling Rosecrans or Imperial in to work up a savings travel plan, 7 a.m. shift, Plant One. La Mirada, WH 1-5549. L
<b>Ironing</b> , wanted in my home. Hawthorne, 672-6060. L
For Sale or Trade
<b>Home</b> , Spanish style, 3-bdrm., 2 baths, fireplace, 2½-car gar., walking distance to Norair, 2,200 sq. ft., \$22,000 or trade for home in South Bay area. L.A., 754-0078. M
<b>Drafting Machine</b> , Bruning, 18" scale, used 2 mos., \$100 or trade for good set of men's golf clubs. Hawthorne, 679-2041. M
<b>Pickup</b> , 1962 Chevrolet, ¾-ton, long, wide bed, hvy. duty axles & tires, r/h, big eng., \$850 or trade for late model station wagon. Hawthorne, 644-6087. M
<b>Drafting Machine</b> , Bruning, 16" w/wood case, \$20 or trade for belt sander, Colt .45 auto. or Luger pistol, or .22 auto. rifle. Manhattan Bch., 379-3487. M

Radio Operators Seek Information For 'Ham' Roster

Publication of an all-Northrop amateur radio roster has been delayed until late August, according to Vaughn Peak of Nortronics Anaheim NRC. Amateurs desiring to be listed in the roster are asked to provide their name, division, department number, call letters, license class, bands or modes operated, times and days operating and whether their station is active or inactive. Send it to Mr. Peak in care of NRC at Nortronics Anaheim.

NIKE-X 'Alumni' Hold First Reunion

An unusual Northrop "alumni" group held its first picnic last month and immediately started plans for another next year. Taking part were Northrop employees who formerly worked in the Northrop NIKE-X support operations at Huntsville, Alabama. There were 30 employees when this operation closed out shortly after the first of the year. Gathered at Victor Park, Torrance, June 25 for the picnic were 57 individuals.

Rides and Riders
Rides Wanted
<b>7 a.m. — 3:42 p.m.</b>
<b>Mathews Ave. &amp; Aviation</b> , Redondo Beach. Maria Cason, Norair, ext. 2350, 379-3023.
<b>Western &amp; 166th St.</b> , Gardena. John Cham-bell, Norair, ext. 2492, 329-5609.
<b>7:24 a.m. — 4:06 p.m.</b>
<b>Anaheim &amp; Figueroa St. Via Harbor Fwy.</b> , Wilmington. Tom Henrich, Mariposa, ext. 4040, 835-9070.
<b>8 a.m. — 4:45 p.m.</b>
<b>Artesia Blvd. &amp; Harbor Fwy.</b> , Gardena. Josephine Green, Nor. Anaheim, ext. 1284, DA 6-8313.
<b>Wilshire &amp; Warner</b> , near UCLA, Westwood. Need ride evenings only. Paul Heineken & Hendrick van Lutterveld, Norair, exts. 2001 & 2500, 474-9207.
<b>Carson or Avalon &amp; Main</b> , Torrance. William E. Honabach, Nor. Johnson, ext. 403, TE 4-0309.
Rides Offered
<b>8 a.m. — 4:45 p.m.</b>
<b>Carson or Avalon &amp; Main</b> , Torrance. William E. Honabach, Nor. Johnson, ext. 403, TE 4-0309.

AIAA

(Continued from page 2)

Mr. Adarkar, an engineering specialist, did work for the paper at Stanford University in collaboration with Professor W. M. Kayes.

Winfield H. Arata, deputy director for Nortronics' Commercial Navigation Systems group, has been named an associate editor of a new AIAA publication, the Journal of Hydronautics.

Mr. Arata is an active member of the AIAA, holding positions on several Institute committees and having been an associate editor for the Marine Systems supplement of the AIAA Journal of Aircraft.

The new journal will provide a medium of exchange for ideas contributing to the advancement of all aspects of man's efforts to use the oceans.

H. F. Marx, assistant to the vice president in charge of Marketing for Norair, has been installed as vice chairman of the Los Angeles section of the AIAA.

Mr. Marx took office at the June meeting of the local AIAA chapter. His duties will include the coordination of Institute meetings.

Lowell Yancey served as administrative chairman while Ernest Ellestad and Don Heinze acted as coordinators of the day for the AIAA Commercial Aircraft Design and Operation meeting held June 12-14.

Mr. Yancey is the technical project director for the SST program. Mr. Ellestad is project supervisor of the 747 Stress group-Basic Monocoque. Mr. Heinze is a configuration design specialist. All three men are employed at Norair.

The June 12 conference heard papers on topics ranging from engine design to airline economics. Groups also toured production areas for the DC-8 and DC-9 commercial jet transports.

M. S. Cahn and Dr. G. M. Andrew collaborated on a paper entitled, "Determination of Subsonic Drag Rise by Hodograph Plan Analysis," published in the May-June issue of the Journal of Aircraft.

Mr. Cahn is a senior technical specialist at Norair and Dr. Andrew is an engineering specialist, also at Norair. Both work within the Applied Aerodynamics and Performance branch of Research and Technology.

The paper deals with the fact that the drag coefficient of a subsonic airfoil remains constant up to about Mach .7 and then, due to compressibility effect, rises significantly.



## Expanded Blood Program Planned for Next 12 Months

Northrop Corporation's voluntary blood program will more than double its normal activities during the next 12 months.

Increased activity reflects growing personnel ranks with correspondingly larger requests for blood.

Volunteer donors from the Corporate office, Norair and Nortronics (West Coast) divisions support this effort. For blood donated during American Red Cross bloodmobile visits to Northrop facilities they receive individual credit, as well as group credit through the Northrop account.

Northrop makes this blood available to employees and members of their immediate families without charge.

(Northrop Ventura runs a

similar program in Ventura County.)

Normally, six bloodmobile visits are slated each year to support the Norair complex.

From now through June 1968 at least 14 bloodmobile visits are scheduled.

Torrance facility personnel from Norair kicked things off July 7 by participating in a joint bloodmobile visit with American Standard personnel.

On July 17 Norair's Santa Fe facility staged an unusual bloodmobile visit. Norair employees there gave blood and employees of industries in the surrounding area were invited to give blood to support their own programs. This type effort is a "first" in the greater Los Angeles area.

Norair and Nortronics Hawthorne-Palos Verdes personnel will give at bloodbanks set for September 6, December 6, March 6 and June 6 in the Hawthorne complex. Mariposa personnel will give September 8, December 1, March 12 and June 10. And night shift employees in Hawthorne will give on September 6 and March 6.

In addition, Nortronics Anaheim will stage an annual bloodbank as will Norair personnel working at Palmdale and Edwards Air Force Base.

## 'Beachcomber' Dance Scheduled by NRC

Northrop Recreation Clubs at Norair and Nortronics Hawthorne-Palos Verdes are planning a real madcap affair—a Beachcomber's Ball—for 9 p.m., July 22 at NRC Clubhouse, Hawthorne.

The Internationals will play and door prizes will be given, along with prizes for the best costumes.

## C-5A 'GALAXY'

### Largest Transport Named

The U.S. Air Force C-5A transport, world's largest airplane, has been named the Galaxy, selected from more than 1,600 names submitted by nearly 5,000 Lockheed-Georgia Company employees.

H. Lee Poore, C-5 program director and Lockheed-Georgia vice president, called the name "particularly appropriate."

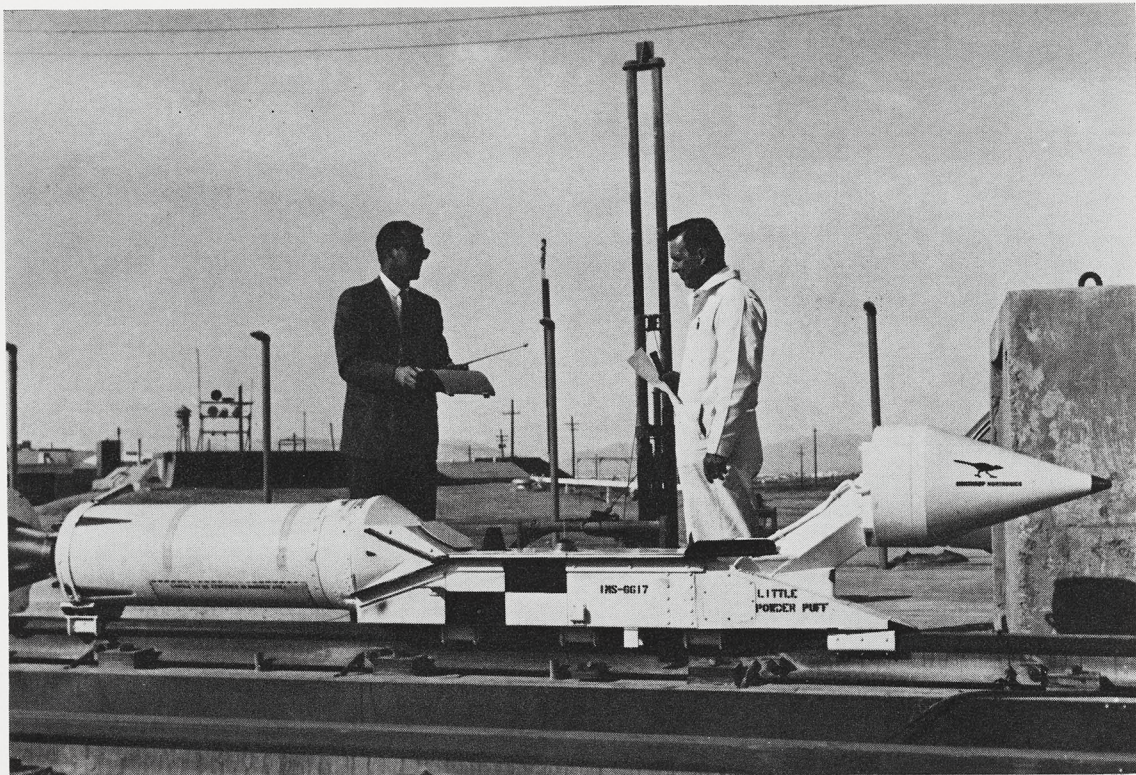
"Galaxy connotes size and greatness — two features the C-5A will demonstrate when it begins operational service with the Air Force in 1969," Mr. Poore said.

The Galaxy will be equipped

with the Northrop Nortronics inertial Doppler navigation system.

The Nortronics system could rightly be termed the "galaxy" within the C-5A Galaxy, since it is a completely self-contained navigation system, not relying on external signals for its navigational accuracy.

Northrop Nortronics is under contract to Lockheed-Georgia which is developing the C-5A under direction of the Air Force Systems Command for delivery to Military Airlift Command squadrons.



*A SUPERSONIC "SCOOTER" — Series of rocket sled tests at Holloman Air Force Base is testing ability of a Nortronics-built device to dispense substances at supersonic speed. Device is shown at right mounted to a two-stage, single-rail solid rocket system with a Nike solid-*

*propellant rocket as the first stage and a Genie rocket as the second. Nortronics' B. W. Morris (right), H. B. Stormfeltz and David Clites have been instrumental in the program along with David Cummings (left), project officer for the Air Force.*

## Two Receive 20-Year Pins At Nortronics

July was another banner month for Northrop Nortronics service anniversaries among West Coast personnel.

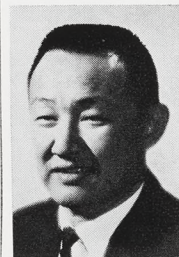
Neale Ebright and Joe Kalina led the list as they marked the completion of their 20th year of working with Northrop.

Fifteen-year anniversaries were observed by John Watson, Lauren Persons, Henry Salinger, Charles Van Riper, William Carey, Maurice Seeley, Orestes Frye, Burton Bracher, Jean Berry, Jeannie Jappe, Vanloria McLaughlin, Stanley Ecklund, Ruthe Schlosser, Richard Jolley, Robert Tweedy, Charles Anthony, Fred Etcheverry, Ted Fujimoto, Wallace Pfeil, F. J. Lucca, Samuel Fung, Donald Dahl, Arnold Beaudoin and Martha Morales.

## AUTOMATION SYSTEMS

### Chung Earns Promotion

Daniel T. Chung has been promoted to director of Automation Systems Engineering at Northrop Nortronics' Anaheim facility. His responsibility covers all engineering activities connected with automatic checkout and monitoring systems.



Mr. Chung

The Anaheim facility developed and is manufacturing monitoring and checkout equipment for the Polaris and Poseidon weapons systems. For the new Knox-class anti-submarine destroyer escorts, the company is building Tactical Evaluation and Monitoring System (TEAMS), which

checks and reports combat readiness of key radar and sonar equipment.

Mr. Chung will also direct studies aimed at applying advanced measurement system techniques and sensors to a broad range of combatant and non-combatant systems. Use of these new developments in the field of automatic checkout equipment could lead to significant gains in the operational predictability and maintenance of prime equipment.

A graduate of the University of Southern California, Mr. Chung has been with Nortronics since 1962. Most recently he managed the Polaris / Poseidon missile checkout development and support program.

## OPEN-MINDED OUTLOOK

### Jo Louis Knows Skill Means Learning

Josephine Louis believes that for a person to be a good electronic assembler, he or she, should have the ability to soak up new ideas like a sponge soaks up water.

This, she reasons, leads to a constant absorbing of information — new methods, new techniques and better ways of doing things.

"Naturally, basic skills, infinite patience and dexterity are all required for this work," Mrs. Louis says, "but unless you keep an open mind, learn a little more each day, you are soon left behind."

Although Mrs. Louis modestly disclaims the honor, she is considered as one of Northrop Nortronics' most talented and versatile electronic assemblers.

She works for the C-5 Airborne Manufacturing Operation at Hawthorne. In her are mirrored the variety of capabilities and basic talents that combine to make this vital arm of the Navigation department so efficient.

This wealth of talent also paves the way for sharing of

knowledge, a common and encouraged practice.

It is an ideal place for a sponge-like attitude.

Mrs. Louis and a small group of veterans in the function are frequently asked to help indoctrinate and train new personnel, some who have never worked as electronic assemblers.

General Foreman Bob Davies points out:

"Jo Louis is a rare individual. She has all the basic skills, plus a driving desire to excel, to do each job better than the last. Her assemblies are works of art. She is quick, but careful. She shares her talents and techniques. She has the patience every good teacher must have. She is both respected and well-liked."

Mrs. Louis has been in electronic assembly work since 1958. She joined Nortronics in 1962 after experience with such firms as Hughes, Ryan and Servomechanisms.

She is especially fond of working on prototype and first items

which require a little more of her.

She helped fabricate a mockup, then the first item for a new C-5 airborne power supply just recently.

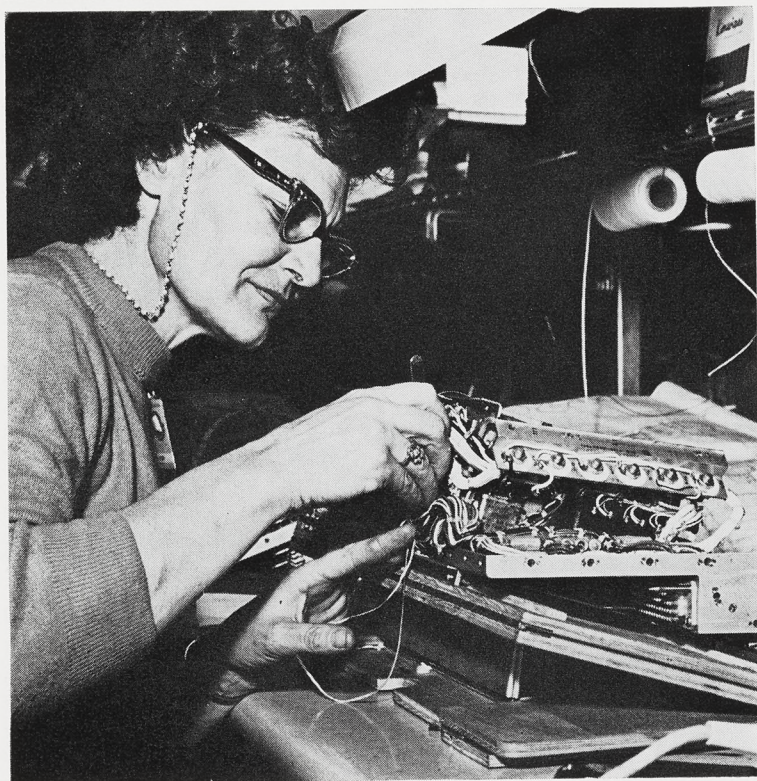
"This type of work is challenging and interesting. It brings me into contact with interesting people," Mrs. Louis says.

Sharing Mrs. Louis' love of electronics is her husband, John, a Norair veteran of more than 20 years.

At home the Louis duo operates a "kitchen table" workshop for tinkering with electronics. They rebuild radio and television sets and dabble in inventions of their own.

They are currently seeking a patent on their idea for an alarm system of an unusual type.

Another Louis hobby, driving and sightseeing, fits in with the electronics bit. They frequently drive to outlying areas to attend "swap meets" where they pick up old radio and television units, plus anything else of interest to their eyes.



*HANDS OF AN ARTIST—Josephine Louis, one of Northrop Nortronics' most versatile and talented electronic assemblers, deftly ties off wire grouping. Mrs. Louis is a master at her trade and excellent instructor for new employees. She and her husband, John, a Norair employee, tinker with electronics as a hobby, rebuilding old radio and television sets and putting together devices of their own design.*



# NORTHROP NEWS

NORTHROP NORTRONICS

Published biweekly by Northrop Corporation, Beverly Hills, California

Vol. 25, No. 15

August 2, 1967

## OVI-12 Seeks Information On Radiation

The U.S. Air Force OVI-12 satellite carrying a Northrop instrument package was launched into orbit last week from Vandenberg AFB.

Northrop Systems Laboratories is responsible for about 70 per cent of the experiments in the OVI-12 payload. Data will be sought on radiation hazards for crews of future space programs.

The satellite, called Flare Activated Radiological Observatory (FARO) is a joint effort of the Air Force Office of Aerospace Research and Air Force Weapons Laboratory. It was launched atop an Atlas booster.

The satellite package will conduct significant biological measurements of the space radiation environment at altitudes of 250 to 350 nautical miles above the earth.

The firing was one of a series of launches which will permit scientists to monitor solar radiation during periods of maximum solar flare activity. Solar flares are eruptions from the sun's surface, which along with other effects, increase harmful radiation in space. The FARO satellite instruments will be automatically activated by sun flares. When solar eruptions decrease, the instruments will shut themselves off until the next solar flare.

This payload was the second Northrop instrument package orbited to investigate space radiation hazards. The first was orbited October 5, 1965 aboard the OVI-2 and is still relaying data from the inner Van Allen Belt.

Additional objectives of the Flare Activated Radiological Observatory are to:

Provide dynamic (on the scene) data in order to further define experimental methods and limits for the Manned Space System program.

Adequately define the biological hazards which will be encountered during a solar flare.

Provide data for the theoretical interpretation and calculation of the radiological hazards in near-by space.

Provide a synoptic map of the radiation environment at 250-350 nautical miles altitude.

## Optimists Elect G. W. Huthmacher

George W. Huthmacher, a Northrop Nortronics senior field engineering representative, was installed last month as president of the North Charleston (South Carolina) Optimist Club.

Mr. Huthmacher has been assigned to the U.S. Navy's Polaris Missile Facility-Atlantic at Charleston since joining Northrop in May 1960. Mr. Huthmacher is a charter member of the North Charleston Optimist Club.



CANADIAN PARLIAMENT flashes by below as Northrop F-5B sporting RCAF markings passes over Ottawa. This aircraft returns to Canada next week to take part in the Abbotsford International Air Show near Vancouver, British Columbia.

## APOLLO PROGRAM

### Aerial Testing Under Way

Aerial testing has begun at Northrop Ventura's El Centro facility on the revised earth landing system for the heavier weight Apollo Command Module.

Program Manager W.A. Steyer said the testing began on a weekly basis last month, and will continue through February.

The program includes the design, test and requalification of the earth landing system.

In the latest tests a 1,000-pound test article was air-dropped over the California test site to check a new two-stage reefing system for the Apollo spacecraft's three-man parachutes. Approximately 30 air drops are scheduled to evaluate the new reefing system and larger drogue para-

chutes. According to the National Aeronautics and Space Administration, an Apollo boilerplate spacecraft weighing up to 13,000 pounds will be tested.

Ventura has built and supplied parachute systems for all Apollo, Mercury and Gemini missions.

Project engineers on the Apollo team are Bob Wondka, Cary Buhler, Bob Boulanger, Leon Scrydloff, Bob Rowlett and Bert Engstrom.

Other key men on the program include Gary Porter, Manufacturing representative; Jim Ruddy, Apollo contract administrator; Bob Keefer, Master Planning; John Simpson, Quality Assurance representative; and Al Martin, Quality Control representative.

## Northrop F-5B to Visit International Air Show

Northrop Corporation's leased F-5B tactical fighter will streak northward to Canada next week to rendezvous with elite aircraft from around the world taking part in the Abbotsford International Air Show.

The dates are August 11-13.

This annual show, held just north of Vancouver, is Western Canada's "big" summer aviation event. Last year it attracted 100,000 spectators.

It affords visitors a rare opportunity to view the latest aircraft from around the world, ranging from the small "bush" planes so essential to Canadian life to giant cargo carriers and supersonic speedsters like the F-5.

Static displays allow closeup views of aircraft. Then on the concluding day a giant air show sends many of the aircraft into the air to perform.

The Northrop F-5 will be seen in both static display and in flight.

Canadians have shown a special fondness for the F-5 which will be a mainstay in their defense force when it joins the Royal Canadian Air Force (RCAF) as the CF-5.

In flight the F-5 is so maneuverable it goes through a special routine—maximum power take-off, tight figure 8's, rolls and climbs—without ever leaving the view of air show spectators.

H. E. (Hank) Chouteau, Northrop's chief test pilot, will ferry the F-5B to and from Canada and put it through its paces at the air show.

George Sterling, chief of Aircraft Demonstration programs; Monty Montgomery, crew chief; and Bill Spore and Hank Weaver, ground crew members, will provide support.

This Canadian visit is sponsored jointly by the RCAF and Northrop. The F-5B will display RCAF markings.

Over the past two years the Northrop F-5B with RCAF markings, has become a familiar sight

throughout Canada.

From May 3 through May 13 the aircraft made a fast tour of RCAF training bases to allow RCAF instructor pilots an opportunity to fly it and young pilots now in training an opportunity to examine it.

During the 10 day period, at such bases as Moose Jaw, River, Winnipeg, Gimli and St. Hubert, the F-5B flew 53 times.

The aircraft has now logged 1,311 demonstration flights in the United States, Hawaii, throughout Europe and the entire Middle East areas.

## Flight Safety Services Earn Commendations

Two Northrop Norair Flight Safety technicians have been commended by the U.S. Air Force for their investigation of a recent F-5 accident in Europe.

B. L. Brigham and O. E. Compton were praised by Colonel William P. Elliott, president of the Air Force Accident Investigation Board, in a letter to Thomas V. Jones, Northrop Corporation president.

"Without the services of Mr. Brigham and Mr. Compton," Colonel Elliott wrote, "the investigation and analysis of this accident would have been substantially more laborious and time consuming than it was."

"On a personal note, these gentlemen are two of the finest aircraft accident investigating technicians with whom I have ever worked. As individuals and technicians they were outstanding."

"We appreciate your expedient response in sending two such qualified men to help us in a most difficult task."

The services of Mr. Compton, representing Design groups, and Mr. Brigham from Flight Safety, are part of a continuing Northrop safety program which includes assistance to customers in accident investigation.

## THREE COMING UP

### Annual Family Picnics Promise Fun for One and All

Summertime is picnic time.

Just around the corner are three gigantic picnics, planned just for Northrop families and promising something of interest for the young at heart of all ages.

Northrop Recreation Clubs will stage them.

Busy hosts are anticipating a total of 13,000 people, Northrop employees and their families, will take part in the three events.

The first will be held August 20 at the Los Angeles County Fairgrounds, Pomona. It is under the sponsorship of NRC Councils at Norair and Nortronics Hawthorne-Palos Verdes.

One week later, on August 27, Nortronics Anaheim's NRC will host the second at Swiss Park,

Duarte.

Sunset Farms, San Fernando, will be the site of the third picnic staged by Northrop Ventura Recreation Club September 9.

Special invitations are being extended to military, vendor and subcontractor personnel assigned permanently at each Northrop facility to join in the fun.

#### POMONA

At Pomona the Northrop "Fun Fair" gets under way at 10 a.m. and continues until 6 p.m. with entry gates scheduled to close at 4 p.m. At that time drawings will be held for a bevy of prizes. Winners must be present to receive their awards.

Plans call for free pop, ice cream and popcorn to be distributed throughout the day with

sudsy beverages and hot dogs available at 25 cents each or five for \$1. There will also be 20 rides, bingo, assorted other games, including miniature golf, visits to a gold mine and open play volleyball, badminton and softball.

Two bands will play for dancing and a variety of acts presented during the day.

Free admission tickets for families will be distributed with paychecks August 10 and 11. They will be exchanged at the gate for individual packets which include prize drawing entries, name cards and programs.

#### SAN FERNANDO

Sunset Farms, San Fernando, is larger and better equipped than parks used by Northrop

Ventura families for picnics the past two years. This will enable NVRC to expand its plans for activities and the larger number of people expected this year.

There will be facilities available for swimming, horseback riding, softball, music, dancing and games of all types. For the young there will be clowns, a puppet show and many other features.

Busy planners are mapping out a full day of entertainment for families.

A nominal charge, as yet undetermined, will be made for each ticket which will include the price of admission as well as all food and entertainment.

#### DUARTE

At Swiss Park the gates will (See **BIG FAMILY**, page 6)





PAST REVIEWING STAND goes Norair float which won first in the "theme" division of float judging following the Hawthorne Kiwanis Parade. Riding the float are six attractive Northrop

ladies along with models of the Boeing 747, Northrop T-38, F-5, HL-10 Lifting Body vehicle, M2-F2 Lifting Body vehicle, Boeing SST and Northrop OV2 satellite.

## NEWSWORTHY NOTES

### Papers, Talks Cover Many Subjects

W. M. Clark, senior engineer at Nortronics Palos Verdes, will read a paper on "High Altitude Daytime Sky Radiance" at the Society of Photo-optical Instrumentation Engineers Technical Symposium August 7.

Mr. Clark is project engineer for the program which bears the same name as his paper. He is also responsible for the Photo-metric Standards Laboratory at Palos Verdes.

The symposium will convene August 7-11 in Los Angeles at the International Hotel.

Northrop employee Pat Odom will have his work presented to the American Institute of Aeronautics and Astronautics Guidance, Control and Flight Dynamics Conference to be held in Huntsville, Alabama August 14-16.

Mr. Odom, attached to the NASA Marshall Space Flight Center in Huntsville, co-authored the paper, "A Computer Simulation of the Orbital Launch Window Problem," with Archie Young, an aerospace engineer.

Mr. Odom is chief of the Mission Analysis branch of the

Systems section, Northrop Systems Laboratories, located at the flight center.

The Southwest Section of the American Vacuum Society will meet Wednesday, August 16, at the Cockatoo Restaurant, 4334 West Imperial Highway in Inglewood.

The speaker will be Hugh Smith who will talk about "High Energy Rate Electron Beam Processes."

Leon Bledjian, a Norair senior engineer, has written an article called "Transient Thermal Response of Multiple Foil High Temperature Radiation Shields"

### International Picks McDougall For Plans Post

Thomas A. McDougall, a marketing executive for more than 20 years primarily in international aerospace operations, has been named director of plans for Northrop International.



Mr. McDougall

The appointment was announced by C. R. Gates, vice president, Northrop International.

A 1940 Oregon State University graduate in aeronautical engineering, Mr. McDougall is a native of Portland, Oregon. He served in the U.S. Navy during World War II as a PT boat commander in the Pacific Theater.

For several years he was director of marketing for Lockheed Aircraft International, Inc., with responsibility for worldwide marketing of new products and services, and for aircraft program management in Latin America and Europe.

Subsequently, he was director of international market development at Litton Industries Systems Group, being responsible for overseas and multi-national programs, and concerned with international acquisitions, mergers and joint ventures. He also coordinated activities of overseas manufacturing plants with domestic operations.

for the AIAA Journal of Spacecraft and Rockets.

The text will appear in the August and September issue.

James D. Willson, Corporate vice president of Finance, will deliver a speech to an American Management Association seminar entitled, "Fundamentals of Finance and Accounting for Non-Financial Executives."

The seminar will run September 11-15 in the Ambassador Hotel in Los Angeles. It is designed to aid non-financial officers whose departments are closely affected by financial and accounting concepts.

Three Norair employees have collaborated on a paper titled "Scattering from Finite Cylinders by Source Distribution Technique."

F. K. Oshiro, engineering specialist; Dr. K. M. Mitzner, senior scientist; and R. G. Cross, senior engineer, worked on the study to be read to the Ground Identification of Satellites Symposium, meeting October 2-4 in Bedford, Massachusetts.

Mrs. L. G. Seaman, secretary to Robert V. Schmidt, Norair director of Advanced Market Development, has attended the National Secretaries Association convention in Toronto.

The association met July 11-15 with 1,500 registrants participating in the convention activities.

### Joseph Shulsingers Receive Essay Award

Mr. and Mrs. Joseph Shulsinger received an "Excellence Award" recently for an essay they penned for a national contest conducted by the American Security Council.

Mr. Shulsinger is a senior sub-contract administrator for Northrop Nortronics.

The Shulsinger essay, "Freedom and Free Enterprise," outlined a program for strengthening the role of education in freedom.

The over-all competition attracted more than 1,000 entries. It was a search for ideas as to how American business can meet the communist challenge to peace and freedom.

## Norair's Parade Entry Awarded Theme Prize

Northrop Norair won first place in the "theme floats" category for its entry "Brilliant Future—The World of Aerospace" in the Hawthorne Kiwanis parade.

The parade, staged in conjunction with the Hawthorne Community Fair, was held July 20, featuring floats and marching groups saluting the theme, "The World on Parade."

The 45-foot long Norair float carried six employees. They were Juanita Estiamba (Spares and A.G.E. Control), Betty Linton (Plant Protection), Jeannette Pepin (Aircraft Inspection), Nancy Post (Quality Control), Maxine Robertson (Credit Union) and Dottie Shantz (Personnel Activities).

Twelve-year-old Jon Winkensch of Manhattan Beach also rode the float, reading from a large "book" entitled "Aviation" to signify the promise of future careers in the aerospace industry.

This is the third year Norair has sponsored a major float in the parade. The 1967 entry was built by the Reliable Decorating and Manufacturing Company of Riverside.

Northrop displayed its family of products at the Community Fair in a booth with pictures, models and a four-minute movie depicting changes at Northrop resulting from new programs such as the 747.

## Ben F. Collins To Head New NV Function

Ben F. Collins, jr., an executive with 32 years experience in the aerospace industry, has been appointed manager of the Program office for Aeronautical Systems at Northrop Ventura.

Mr. Collins' appointment and establishment of the new office

were announced by Welko E. Gasich, vice president and Northrop Ventura general manager.

Mr. Collins comes to his new position from Northrop's Norair Division where he had held key positions since joining the company in 1964.

The office for Aeronautical Systems will incorporate all of the division's unmanned radio-controlled aircraft and target missiles including the KD2R-5 type propeller-driven drone, the jet-powered NV-105 target aircraft, and the RP-76 rocket-powered supersonic drone. The office also will be charged with the task of developing advanced aeronautical systems.

W. M. Stowell, who has been program manager for the newly-developed NV-105 drone, will remain in that position.

Before joining Northrop, Mr. Collins had been associated with the Douglas Aircraft Company where he managed the A-4 aircraft program. As a result of his extensive travel in the Orient, he was assigned the task of concluding the activities of the Japanese Army and Navy Air Forces after Japan's surrender at the end of World War II.

A native of Minnesota, Mr. Collins attended the University of Washington in Seattle.



Mr. Collins

## Gasich Outlines Growth Prospect Facing Ventura

Welko E. Gasich, Northrop vice president and general manager of the Ventura Division, told division personnel July 26 that "we have a grave responsibility for performance and at the same time the greatest possibility for growth we have seen in years."

He addressed all division employees in a brief pre-lunch gathering on the Mall.

Mr. Gasich pointed out that Northrop Corporation's goal is to grow from \$460 million in sales in 1966 to the \$1 billion level (including growth and acquisition) by 1972.

"We can grow as a member of the Northrop team," he said.

The general manager stressed the three criteria which must be met for high performance—cost, schedule and quality.

"I hope we don't forget those," he said. "I am not content with second-rate performance and I don't think you are."

"We are making some functional realignments to achieve a high degree of professionalism," he added. "I expect this of everyone. This division stands before its greatest opportunities. I am confident we can make it a model division."

## German Defense Officials Visit Nortronics Plants

Northrop Nortronics facilities at Anaheim and Hawthorne were visited last month by a group of West German Ministry of Defense officials and their American hosts.

Dr. Herbert Gaertner, director, Technical Division VI, German Ministry of Defense, and his associates, Dr. Helmut Meyer and Dr. Siegfried Thieme, were accompanied by Joseph Hoenig, chief of the U.S. Defense Development Research and Engineering Foreign Liaison Office, Herbert Rickards of the same office and Dwayne McKenna, USAF.

Frank Lynch, Nortronics vice

president and Anaheim manager, was host for the Anaheim visit which included a tour of TEAMS assembly and test areas and discussions.

Ross Miller, Nortronics vice president and Navigation department manager, headed the group welcoming the visitors to Hawthorne. Activities there included briefings on the Northrop-Nortronics-designed and built C-5 transport navigation system, plus other Nortronics-developed computers.

The visitors called at Nortronics as part of an extensive tour of American defense industries.

### Indian Engineer Studies at Norair

Srishchandra Arya is studying Northrop production control techniques and procedures under the sponsorship of the United Nations for four weeks at Norair in Hawthorne.

Employed as an engineer by the Hindustan Machine Tools, Limited, in Bangalore, India, Mr. Arya is especially interested in the implementation of computers in production control.

He is ending a year's training tour in the United States with Northrop, leaving for home on August 4.

Mr. Arya visited Norair for one day earlier this year and asked that he be allowed to return for a longer period. John Fink, supervisor in the Industrial Training branch, planned and is coordinating Mr. Arya's program.

Mr. Arya's one month stay here is the longest he has remained at any industrial facility during his tour.





**DRESS RIGHT DRESS**—Eleven of the 34 women guards employed by Northrop during World War II stand at attention next to what was then Northrop Field. Pearl Ray (third from left) was a member of this force and is now a

receptionist at Mariposa. She and the other women guards were stationed at plant gates and also patrolled what is now Plant One even during the "graveyard" shift.

## New Officer Brings Back Memories of Things Past

If you spot a woman patrolling the Hawthorne complex parking lots on a three-wheeled vehicle, do not be deceived. She is not a stray meter maid from Redondo Beach.

Rather, she is Ann Menard, the first woman Plant Protection guard hired at Norair since World War II.

Unlike her wartime predecessors, Mrs. Menard guards against illegal parking, not infiltration. Her sole job is to write tickets to combat the mounting number of parking violations at Norair.

This is a far cry from the duties of women guards during World War II as recalled by Pearl Ray, a former guard and present receptionist at Norair's Mariposa facility.

With the company for 20 years not counting her war stint, Mrs. Ray was one of 34 women who worked in what is now Plant One from 1943 to 1945.

Mrs. Ray answered a newspaper ad calling for "women firemen and policemen" because, in her words, "it sounded like it would be very interesting."

Her reasoning was an understatement. She and her fellow women guards spent many a night in unheated gate shacks

protecting the round-the-clock operations at Northrop Field.

The women guards also patrolled Plant One on foot, including maximum security areas, in addition to their gate duties.

Mrs. Ray put in a six-day, 54-hour week, often working the graveyard shift and carrying the clock. She did not have a weapon, but took target practice with a pistol.

Mrs. Ray said the long hours and rough duties were taken as a necessary part of the job. "We replaced men and had to accept the same responsibilities," she said.

The job was not without its hazards. Drophammers, for instance, sometimes squirt oil in all directions when they are dropped and somehow, they seemed to squirt most often when a woman guard was passing.

The newest, if belated addition to the protection force is quite natural in Mrs. Ray's opinion. As far as parking duty goes, she says, "I see no reason why a woman cannot perform the job as well as a man."

Backed by history and suffrage, that doesn't seem to be an unreasonable conclusion.

## AT PALOS VERDES

### Everybody Relies on Danny Gravlin

Danny Gravlin has unusual capabilities for a man employed in the aerospace industry. He handles jackrabbits, air conditioning, tree plantings and skunks, yet for this he remains inconspicuous.

However, this combination of ability and efficiency behind the scenes is right for his job as supervisor of Maintenance and Construction at Nortronics' Palos Verdes facility.

Having been at P.V. since it opened, Mr. Gravlin keeps the physical plant operating smoothly through a program of preventive maintenance and quick action to rectify breakdowns.

But Mr. Gravlin adds the ex-

tra touches that make the difference not only in mechanical efficiency, but to people, too.

In the morning, he arrives one hour earlier than regular personnel and makes a tour of all seven buildings to insure that things are in order. If a chair has been left on a desk by a janitor, he will take it down.

These are the small things which Mr. Gravlin does to see that the day starts out right for Nortronics personnel. This does not mean, however, that he hasn't many large things on his mind.

He and his crew of 14 are responsible for 37 acres, including 20 acres of shrubs and

grass; 3,700 sprinkler heads; seven buildings adding up to 120,000 square feet; 600 tons of air conditioning; two decorative pools holding 230,000 gallons of water, two pump houses, and parking lots for 550 cars.

Of his job, he says simply, "I love it." To him, P.V. is his "second home." The 17-year Northrop employee makes his regular home in Torrance with his wife, Ruth.

Mr. Gravlin is chairman of the Safety Committee, sergeant-at-arms of the NRC committee and is president of his league with the Northrop bowlers.

He maintains a unique relationship with his "public," the Palos Verdes employees. He knows most of them by their first names and is usually the first to greet a newcomer.

Conversely, he is usually the first person newcomers call. Mr. Gravlin's office receives between 60 and 80 service calls a week, not including the situations Mr. Gravlin must deal with nights and weekends.

Smiling, he tells about some of the exotic tasks he has performed. In the wilds of Palos Verdes, the facility is home ground for jackrabbits, gophers, snakes and skunks.

At one time, he had to rid one of the buildings of a skunk which was intent on disrupting work. Mr. Gravlin came through with a timely solution: he opened all the doors and let the skunk walk out.

Not so easy a job is the moving and remodeling he supervises as new programs cause reshufflings of people and equipment.

Though complaints rather than praise are more common in his job, Mr. Gravlin deserves recognition. He is earnestly satisfied with his work, his Northrop friends and with making things right in big and small ways.



**GIVE ME A BREAK**—Ann Menard patiently and politely waits for young man to explain why his auto was illegally parked at Norair. Newest member of the Plant Protection guard force is concentrating on reducing the number of parking violators.

## JO ANN STROW, STUDENT EXTRAORDINARY

When Jo Ann Strow graduated from Palmdale High School this year, she concluded her high school years with more than a diploma and a few memories.

Miss Strow left with a 4.0 grade point average (straight A), an impressive group of awards and a long list of school activities.

She is the daughter of Joe and Irene Strow. Mr. Strow works in Quality Control at the Palmdale facility of Norair.

In her senior year, Miss Strow was named Most Valuable Student by the Palmdale Elks Club; Outstanding Student by California Savings and Loan Association; Bank of America plaque winner in Liberal Arts and co-valedictorian.

The Elks Club recently noti-

fied Miss Strow that she has won an award in the state contest for Most Valuable Student.

She also received a \$200 scholarship from the Palmdale High School Faculty Club.

Miss Strow was a California Scholarship Federation Gold Seal Bearer at graduation and is a C.S.F. life member.

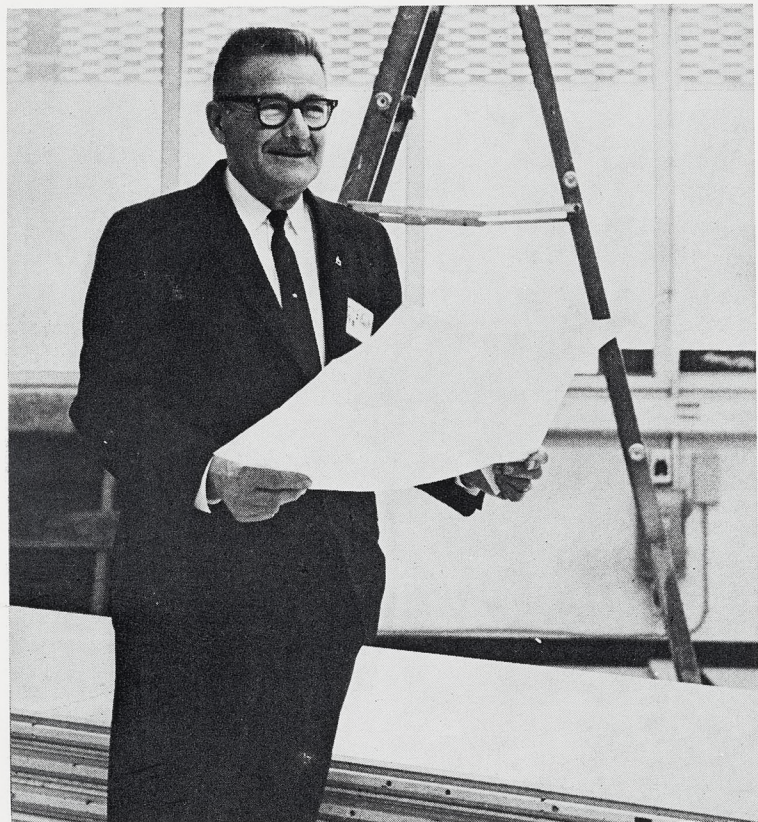
She was a member of numerous clubs and served as a city councilman during the Palmdale Student Government Day.

Miss Strow will attend San Fernando State College in the fall.

## TOURNAMENT SET

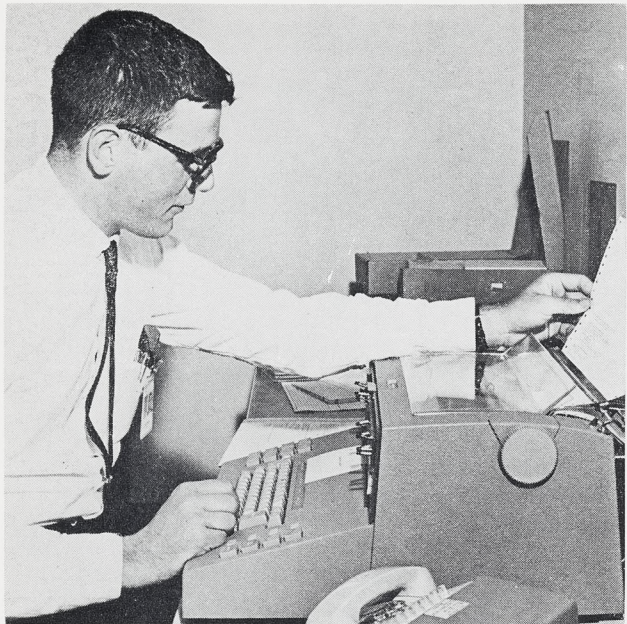
The annual Nortronics Anaheim NRC table tennis tournament is set for 1 to 5 p.m. August 6 at Brookhurst Junior High School, Anaheim.

Singles and doubles events are planned. Entry blanks are now available through Personnel Activities at Anaheim.



**DIRECTING MOVES** is one facet of Dan Gravlin's duties as supervisor of Maintenance and Construction at Nortronics' Palos Verdes facility. The physical reorganization which precedes the actual start of work on new programs is Mr. Gravlin's responsibility, along with the large number of tasks he must oversee to insure the smooth daily operation of the Palos Verdes plant.





**INSTANT ANSWERS**—New Remote Access Computing System (RAX) allows Northrop engineers and scientists to "share time" on a major computer located in Northrop Data Processing's Computing Center in Hawthorne. Norair's Carson Agnew looks over answer to a problem as it is being typed out.



**EASY ACCESS**—Carol Lindgren of Nortronics Hawthorne dials an extension to gain control over major computer serving new RAX network. Ten terminals similar to this one are located at strategic points throughout Norair, Nortronics and Ventura Divisions each containing typewriter, telephone and card reader.



**READY TO SERVE**—This IBM 360 (Model 40) computer in Hawthorne is available to RAX users. System is one of the first of its kind in industry, features unique storage and retrieval capability that allows programmers to "store" information for future use. Bob Taylor sets up the computer at Hawthorne.



**SHARING COMPUTER TIME**—Northrop Ventura's Dave Coe (left) and Mike Allstead use RAX terminal's card reading capability to seek solution to a problem. Since April, when RAX went into service, more than 300 engineers have been trained to use this unique time-sharing device which allows full control over a major computer, although terminal may be miles away as it is in this case.

## RAX: Sharing Computer Time Among Many Northrop Users

In Newbury Park an engineer sits down amidst special equipment—typewriter, telephone and card reader—and dials an extension.

This gives him access to, and control over, a major computer located miles away in Hawthorne.

Simultaneously, a research scientist in Palos Verdes faces similar equipment and sees the solution to a temperature gradient problem—just seconds before requested by him via the typewriter—automatically typed out.

He, too, has complete control over the same computer in Hawthorne.

Ten terminals strategically located throughout Northrop's Norair, Ventura and Nortronics Divisions now provide this access. In time, as many as 15 different people, each with a knowledge of scientific programming, may be using similar equipment linked to a 360 (Model 40) computer located in Northrop Data Processing's Computing Center in Hawthorne independently and without the slightest interference

with one another.

In data processing language this is known as time-sharing—the ability to "share time" on a central computer among a number of independent users.

The transmission network is called RAX (for Remote Access Computing System).

Northrop is among the first industries to install RAX as an integral part of its data processing plans for the future.

RAX has several inherent advantages.

It permits small or isolated organizations, some miles from a computing center, immediate and direct access to a large computer without the cost of having such a computer on site. RAX will permit concurrent and remote entry of several tasks at once. And RAX allows a scientific programmer to alter his program at the moment it is being processed on the computer, a unique feature in data processing.

Which means the programmer can "converse" with the computer, in a manner of speaking. Say, for example, an error is made. The computer instantly in-

forms the programmer of the error. He makes corrections and then proceeds. In routine data processing, errors are noted, but the programmer must move ahead to return later to make corrections.

RAX also permits the programmer to store (electronically) his program for later use. The Northrop RAX library—a direct access disk storage connected to the computer—catalogues programs in much the same way a library catalogues books.

This unique storage and retrieval capability reduces the physical handling of punched cards thereby reducing the human error possibility.

Three months of concerted effort by NDP system programming experts was required to institute this system and make the 360 computer fully available to engineering organizations.

Since April, when RAX went into general use, over 300 engineers, each versed in the FOR-TAN programming language, have been trained in the use of RAX. And training continues.

(See **SHARING TIME**, page 5)

### JIM HAMER STUDIES

## Radiation Affects on Human Behavior

Low frequency electromagnetic radiation and human behavior may not seem related, but a Nortronics engineer is conducting experiments which involve both.

Jim Hamer, senior engineer in Space Systems, is a consultant to the Space Biology Laboratory of the UCLA Brain Research Institute, and pursues his studies in the Institute's labs with support from the staff.

Mr. Hamer's experiments are aimed at studying the influence of extremely weak electromagnetic radiation (2 to 12 cycles per second) on human behavior.

This may have application towards space travel. On long, deep - space probes, astronauts will be exposed to such radiation from the sun for lengthy periods of time.

Mr. Hamer's studies are a first step towards determining the effects of such exposure on astronaut performance.

This series of experiments also has implications in fundamental

brain research, the reason for the Brain Research Institute's interest in Mr. Hamer's work.

Evidence seems to indicate that low frequency radiation alters human response to sensory stimuli. Thus, the question is raised: does this radiation affect brain waves, the basic signal pulses in the nervous system?

The answer to this question may shed some light on the rudimentary problem of how human

responses are connected with the minute fluctuations in brain waves.

The actual experiments involve the measurement of changes in reaction time performance, human judgment of time and changes in the electrical physiology of the brain during exposure to low frequency radiation.

Mr. Hamer's "humans" in the experiments are UCLA undergraduate volunteers.

This sort of investigation is unique to the United States. The amount of literature on this subject is limited, in Mr. Hamer's words, "to one or two papers, and their results are not conclusive."

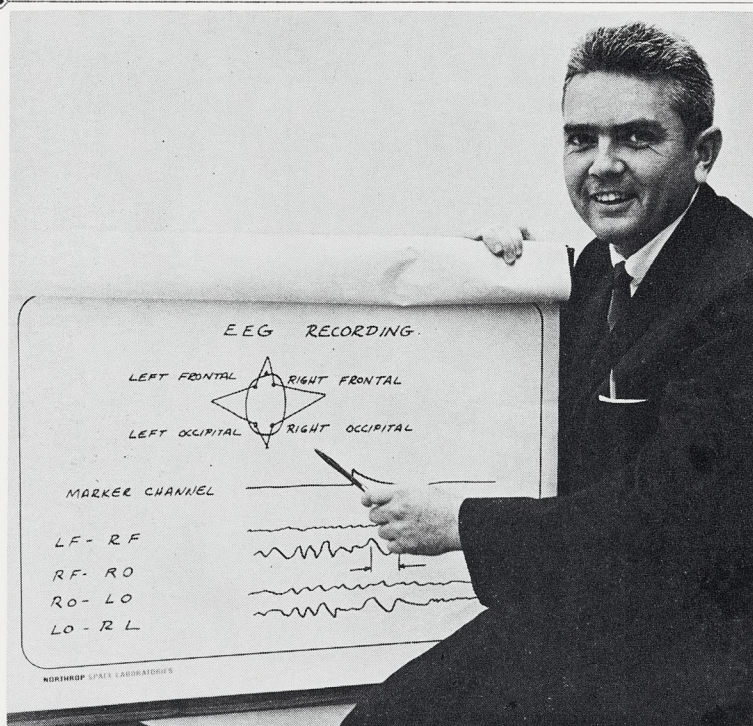
The Nortronics engineer has been with Northrop for four years, about the same length of time he has been involved with his radiation project.

In his regular Nortronics position, he has been assigned to Data Processing and Information Systems Engineering for various projects.

### Santa Paula Class Calls at Ventura

Twenty-four students and their instructor from a World History class at Santa Paula High School visited Northrop Ventura on July 19.

The students were taken on a tour, coordinated by Johnnie Via of Ventura, which included facilities in the Administration, Engineering and Manufacturing buildings.



**BRAIN WAVE SENSORS**—Jim Hamer, Nortronics Space Systems, uses a chart to point out locations of EEG recording sensors on subject's head. Mr. Hamer is a consultant to the Space Biology Laboratory of the UCLA Brain Research Institute and is conducting experiments exploring the effects of weak electromagnetic radiation on human behavior.



Classified

Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private businesses are not accepted. The Northrop News reserves the right to edit or omit ads. Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 62. Ads are limited to one item and one ad per person each issue. Deadline is noon Wednesday, one week before publication.

**For Sale**

**Bookcase**, modern 3-section, 60" long x 48" high, \$15. W.L.A., 836-5575. A

**Sofa**, Lawson, 2 cushion, 6', off-white fabric, \$40. Hawthorne, 823-3418. A

**Stereo Amplifier**, Transis-Tronics model S-25, \$80. Torrance, 323-2273. A

**Relax-A-Cizor**, orig. cost over \$200; \$75. Hawthorne, OS 5-7740. A

**Hide-A-Bed**, Simmons, dble. size, w/slip cover, \$100. Torrance, 324-2992. A

**Acreage**, 31 acres on Pala-Temecula near Rancho, Calif., sell all or part, \$1,500 acre. Rolling Hills, 322-3874. A

**Home**, 4-bdrm., family rm., block wall, sprinklers front & rear, newly painted, new dps. & cpts., \$28,750. Granada Hills, 363-6357. A

**Guitar**, Martin concert model 0-18, case & strap, \$150. Hawthorne, 644-3007. A

**Cabin**, Lake front, quiet cove, view, 2 yrs. old, winterized, pvt. dock, Bass Lake, \$39,-500. Box 1501. A

**Occasional Chairs**, Danish modern, \$15 ea. or \$25. Hawthorne, 644-1337. A

**Baby Items**, sell all or separately, \$15. Hawthorne, 679-7873. A

**Ford**, 1958, Fairlane, auto. trans., \$200. Los Alamitos, 430-7388. A

**Turntable**, Garrard 60 MK II auto., base, Pickering cartridge, all in factory sealed cartons, \$65. Box 1502. A

**Camper Jacks**, \$50. Lawndale, 644-2106. A

**Table**, dropleaf, maple, 4 chairs, 1½ yrs. old, cost \$250; \$125. Inglewood, OR 2-4582. A

**Honda**, 1965, Superhawk 305, \$350. Gardena, DA 4-0649. A

**Hi-Fi Set**, Heathkit 25 w/amplifier, leco FM tuner, Jensen 3-way speaker sys., Bogen 4-sp. record changer w/G.E. cartridge, \$65. Westminster, 714-892-5801. A

**TV**, 23" Packard Bell, b/w consolette, orig. cost, \$300; \$69.95. Gardena, 323-0134. A

**Chevrolet**, 1963 Impala, p/s, p/b, auto. trans., \$1,325. Malibu, 457-7483. A

**Swimming Pool**, Doughboy, 18' diameter, 4' deep, filter, sweeper, skimmer, cover, 1 yr. old, incl. sun deck, cost \$530; \$300. Torrance, 323-3770. A

**Home**, 3-bdrm., 1¼ bath, custom built, cpts., dps., many deluxe bltin features, fenced rear yard w/3 fruit trees, 2 miles from Northrop Plant One, \$28,500. Hawthorne, 675-8829. A

**Painting**, original, modern abstract, 29x39, framed, cost \$120; \$30. L.A., 836-1210. A

**House**, custom built, within walking distance from Northrop, 3-bdrm., family rm., 2-car gar., \$37,950. L.A., 391-3406. A

**Buick**, 1965 Riviera, factory air, custom int., all power, \$2,900. Cypress, 714-828-6719. A

**Cookware**, 18-8 triple ply stainless steel waterless & greaseless, never used, paid \$300; \$150. Hawthorne, 676-7413. A

**Pup**, Yorkshire terrier, male, 6 mos. old, A.K.C. registered, \$100. Inglewood, OR 7-4317. A

**Plane**, Stanley 45, 23 cutters, \$8. P.V. Pen., 377-3806. A

**Bridal Gown**, imported white lace w/silk cathedral train, bouffant veil secured by tiara of lace & pearls, size 10, cost \$150; \$75. Encino, 783-6632, OS 6-6390. A

**Mercury Comet**, 1962, custom, good tires, \$595. Long Bch., 434-9533. A

**Pontiac**, 1965 Le Mans, many extras, new tires, \$2,000. Long Bch., 437-6870. A

**Acreage**, 2½ acres, near Willow Springs, on good road, \$17.50 dn., \$17.50 mo., \$1,750. Torrance, FR 8-1026. A

**Love Seats**, matching, \$50 pr. Manhattan Bch., FR 2-0901. A

**Pickup**, 1966 Chevrolet, ½-ton, V-8, r/h, will give \$1,000 equity, \$90 mo. pymts, \$1,850 bal. So. Gate, 566-2463. A

**Poodles**, miniature, 6 wks. old, AKC sired, 2 silver & 1 apricot males, light apricot female, \$50 ea. Garden Grove, 714-539-2262. A

**Station Wagon**, 1962 Mercury Colony Park, all powered, \$900. Inglewood, 474-0110. A

**Den Furniture**, Hide-A-Bed, end tables, lamps, \$100. Hawthorne, 675-2514. A

**Station Wagon**, Volkswagen, 1965 1500S Varient Super, w/w, Blaupunkt AM/FM, 34,000 miles, \$1,795. Torrance, TE 5-8687. A

**Record Player**, B & N, w/vibrasonic, wood & chrome, for car, \$95. Lawndale, 370-1963. A

**Thunderbird**, 1963 Landau, air, many extras, 42,000 miles, \$1,695. Inglewood, 678-8727. A

**Tape Recorder**, Concord portable, mono, under warranty, inc. voice-activated mike, 19 reels of tape, other access., \$35. P. V. Pen., 377-6193. A

**Surfboard**, 9'10" Dewey Weber, medium-sized surf jacket, car rack, sell as a unit only, \$95. Inglewood, PL 5-6830. A

**For Sale**

**Crib**, mattress, & matching 5 drwr. chest, \$50. Gardena, 327-1977. A

**Motor Scooter**, 1967 2-seater, Vespa, 150 cc, 1,555 miles, \$300. Hawthorne, 675-9681. A

**Boat**, 8' Sabot, Dacron sail, plywood glassed, modified to take small o/board, \$125. Inglewood, OR 2-4794. A

**Cribs**, chestnut finish, 2, matching chest-of-drawers, sell separately or \$50. Hermosa Bch., 374-5375. A

**Window**, alum. casement, 4'x10', w/mounting hardware & screens, \$50. San Pedro, 833-6704. A

**Go-Kart**, no engine, new paint, \$20. Glendale, 246-4495. A

**Accordion**, 120-bass, Italian, 6 mos. old, orig. cost, \$550.; \$200. L.A., WE 3-3051. A

**Home**, 2-bdrm., den, 1½ bath, cpts., dps., bltins, d/washer, fireplace, 10% down, \$30,-500. Inglewood, DA 9-2174. A

**Grass Mat**, 600 sq. ft., cost \$110; \$75. Inglewood, 671-2333. A

**Hydroplane**, 8'2", 10 h.p. Scott-Atwater motor, \$350. Hawthorne, 676-9518. A

**Corvette**, 1961, 283 eng., fuel inject., 456 positraction rear axle, mag. wheels, 4-sp. trans. w/scatter shield, Hurst floor shift, Jardine headers, \$2,000. Hawthorne, OS 6-3792. A

**Home**, 5-bdrm., 2 bath, 80 x 116 lot, pool, enc. patio, 24' x 24' detached cabana w/ fireplace, bar & grill, liv. rm. w/fireplace, enc. porch play rm., dble. gar., dble. parking apron, 15 mins. to Hawthorne, \$48,000. Manhattan Bch., 374-8744. A

**Buick**, 1959 Le Sabre, \$225. Whittier, OX 5-6598. A

**Differential gears**, for 1957 & up Ford, ring & pinion, 4.88 to 1 ratio, \$60. Wilmington, 835-2184. A

**Dining Room set**, birch, dropleaf, 2 leaves, custom pad, 4 chairs, \$75. Torrance, 325-1190. A

**Station Wagon**, 1954 Ford, auto. trans., r/h, \$230. L.A., 472-2031. A

**Dishwasher**, G.E. convt. front load, used 3 mos., \$125. Yorba Linda, 714-528-9227. A

**Buick**, 1960 Electra, 4-dr. h/top, full power, \$425. Santa Ana, 714-838-3040. A

**Front End** for 1967 GT-500 Shelby, minus hood, incl. grill, driving lights, fits any '67 Mustang fastback, \$250. Bev. Hills, 676-6188. A

**Sofa**, chair, both convert to beds, \$100. Torrance, 370-4458. A

**Stereo Recorder**, Ampex, cost \$286; \$125. La Mirada, WH 1-5549. A

**Mag Wheels**, 2 Hollywood, 14", 2 Cragler, 15", for Chev. & 2 9.00 x 15, 1 18.25 x 15 Firestone cheater slicks, 7" wide, \$100. Hawthorne, OS 5-7049. A

**Aquarium Tanks**, 3 15-gal., all access. & piranha fish, \$12 ea. or \$50 inc. fish. Torrance, 325-9328. A

**Air Conditioner**, 2,400 btu, room size, \$50. Redondo Bch., FR 9-3134. A

**Signal Generator**, TV & FM wide band, 5" wide band oscilloscope, Hickok TV dot & bar gen., \$150. Hawthorne, OS 9-1550. A

**Bedroom Set**, dble. bed, bookshelf h/board, box springs & mattress, dresser, night stand, chest, white & gold, \$100. Hawthorne, 675-2315. A

**Washer**, gas dryer, white, Kenmore, paid \$340, used 4 mos., \$200. Torrance, 325-4035. A

**Honda 50**, C-110, never driven, \$230. Inglewood, 674-4285. A

**Comet**, 1960 4-dr., auto. trans., r/h, new tires, \$300. Torrance, FR 5-9946. A

**Home**, 3-bdrm., 1½ baths, fam. rm., cpts., new kitchen, 2-car gar. converted to playroom, \$34,975. L. A., 645-8611. A

**Range**, 4-burner, gas, stainless steel top, \$100. Playa del Rey, 391-9660. A

**Breakfast Nook**, pink, U-shaped, seats 5 adults, \$30. Fullerton, 525-2555. A

**Falcon**, Rancho, 1964, \$995. Brea, 529-3531. A

**Guitar**, Kay, elec., 30 watt amplifier w/3 pickups, 4 position selector, over \$250 invested, \$85. Fullerton, 964-7251. A

**Home**, 3-bdrm., 2 baths, family rm., G.E. bltins, d/washer, copper pipes, fireplace, lge. patio, Gardena area, low down or G.I., \$25,900. Dominguez, 254-7986. A

**Aircraft**, T-Craft BC-12D 1947, 85 h.p., 550 S.M.O.H., 75% ceconite, Skycrafters' radio, \$1,850. Huntington Bch., 847-5452. A

**House**, ultra modern, 2-bdrm., fireplace, attached gar., \$25,500. Manhattan Bch., FR 4-2643. A

**Range**, Kenmore elec., \$175. L.A., 756-0057. A

**Surfboard**, 8' Gregg Knoll, \$30. P.V., FR 7-4943. A

**Tires**, 4, 7.00 x 7.50 x 17", tubes & wheels from Chev. ¾-ton truck, \$200. Manhattan Bch., 379-3487. A

**House**, 3-bdrm., 1¼ bath, cpts., dps., fireplace, screened in patio, 4½ yrs. old, \$23,000. Diamond Bar, 714-595-3398. A

**Wheel Discs**, set, chrome, for Corvair, \$5. Inglewood, 758-9182. A

**Volvo**, 1963 2-dr., r/h, \$895. Torrance, DA 5-5245. A

**Piano**, studio, Starr, mahogany finish, \$275. Torrance, 328-7476. A

**Plymouth**, 1957, new brakes & tires, r/h, air cond., needs tune up & muffler, \$95. Torrance, 835-5708. A

**Turntable**, P-58H, hysterisis synchronous motor, tone arm w/Empire stereo cartridge, \$35. Venice, 399-8045. A

**Chevrolet**, 1966, 396 cu. in., 4-sp., p/s, many extras, low mileage, \$2,400. Long Bch., 423-0843. A

**For Sale**

**Sailboat**, Lido 14, trailer, \$1,195. Placentia, 714-524-0691. A

**Stole**, ranch mink fur, Emba, cost \$1,000; \$300. Torrance, 326-1382. A

**Ski Boat**, 17', 427 Ford eng., many extras, \$3,800. Culver City, UP 0-3441. A

**Oldsmobile**, 1963, 2-dr., F-85 Cutlass, p/s, r/h, console, b/seats, w/w tires, \$1,225. Burbank, TH 2-5641. A

**Printing Outfit**, complete new press, ink-type, all nec. accessories, paper inc., \$175. No. Hollywood, 765-3266. A

**Boat**, 27' Sport Fisher, galley, trolling outriggers, fighting chair, deep V planked hull, 110 h.p. Chrysler marine, \$2,800. Riverside, 688-5247. A

**Washer**, auto., Kenmore, 3 cycle, p/button, top load, \$50. L.A., OR 0-5927. A

**Rug**, wool, 9 x 12, pad & bedspread, \$30. Gardena, DA 4-8853. A

**Falcon**, 1961, 4-dr., r/h, \$200. Gardena, 324-3410, 830-2582. A

**Bicycle**, boy's 3-sp., new 26" tires, \$20. Redondo Bch., FR 5-8804. A

**Dodge**, 1962 Lancer, r/h, good tires, stick shift, needs a little work, \$125. Westchester, 670-3289. A

**Tires**, 2 8.00-15, good white wall, \$10. Gardena, DA 9-4200. A

**Motorcycle**, BSA, 175 cc, 1,900 miles, \$295. Inglewood, 672-7552. A

**Plymouth**, 1949 4-dr., 1-owner, \$100. Gardena, DA 4-4507. A

**Trailer**, for keel sailboat, 4-whl. hvy. duty, welded tubular steel, \$250. San Pedro, TE 1-9545. A

**Vacuum Cleaner**, Electrolux, attachments & extras, \$15. L.A., 664-7943. A

**Motorcycle**, 1959 Norton, 250 cc, \$250. Hawthorne, 675-1336. A

**Tenor Saxophone**, 1 yr. old, \$150. Hawthorne, 675-7375. A

**Dodge**, 1966 Charger, r/h, 4-sp. trans., 383 eng. w/4 bar. carb., \$2,500. Lawndale, 371-6775. A

**China Cabinet**, early American, 60" wide, 2-piece, cost \$400; \$100. L.A., 757-4252. A

**Land**, 2.5 acres, Kern County, 500 yds. from L.A. aqueduct, \$25 dn., \$25 mo., \$2,500. Long Bch., 438-8331. A

**Dune Buggy**, 1959 Austin Healey Sprite, \$200. Lawndale, 644-3373. A

**Fishing Boat**, 10', fiberglass, Glasspar, suitable for cartop, 3½ h.p. motor, new hardware, seats & paint, \$100. Torrance, PL 4-2020. A

**Ford**, 1959 2-dr. h/top, \$199. L.A., PL 5-5584. A

**Corvette**, 1962 h/top, Powerglide, \$1,750. Hawthorne, 676-9667. A

**Mercury**, 1962 convt., 1-owner, full power, \$895. Orange, 633-4720. A

**Grand Prix**, 1964, full power, \$2,200. Baldwin Pk., 962-6365. A

**TV**, 17" portable Zenith, used about 20 hrs., \$70. Gardena, DA 9-1332. A

**Yamaha**, 1966 YDS-3, 250 cc, \$425. Torrance, DA 3-7544. A

**Ironer**, Montgomery Ward, 9 fabric settings, used very little, \$40. Long Bch., GA 3-1363. A

**Camper**, Tropicana, 8', cabover, \$895. Hawthorne, OS 5-3541. A

**Ford**, 1959 station wagon, r/h, p/s, good tires, \$325. Redondo Bch., 372-6628. A

**Motorcycle**, Suzuki, 1966, 150 S32-2, \$295. P.V., 378-1561. A

**Organ**, Baldwin, model 40 Orga-Sonic w/percussion, Philippine mahogany, matching bench, 2 manuals plus octave of bass pedals, orig. cost over \$1,300; \$275. Redondo Bch., FR 5-3914. A

**Dodge**, 1963 Dart, 6-cyl., auto. trans., r/h, 55,000 actual miles, \$700. Northridge, 342-8153. A

**Ford**, 1966 Futura, 4-dr. sedan, auto. trans., r/h, s/belts, new tires, take over \$85 mo. pymt., incl. ins., \$1,800. Lawndale, OS 6-5425. A

**Corvair**, 1961 station wagon, r/h, auto., needs eng. work, \$135. Playa del Rey, 823-1531. A

**Slip Lot**, Salton Sea, boat dock on channel & lot for house, water, sewer, streets & elec. incl., \$7,100. Anaheim, 535-1694. A

**House**, 4-bdrm., 2-story, 2½ baths, block wall, landscaped, new cpts., G.I. loan, 1,850 sq. ft., h/wood floor, \$30,500. Cypress, 714-828-9075. A

**Ford**, 1957 Fairlane 500, 2-dr. h/top, chrome wheels, new tires, 30,000 on rebilt. eng., recent brakes, \$300. Redondo Bch., DA 6-2779. A

**Buick**, 1963 Special station wagon, V-8, auto. trans., new w/w tires, p/s, r/h, \$1,375. Garden Grove, 714-638-9396. A

**Chevrolet**, 1957 2-dr. h/top, V-8, auto. trans., r/h, p/b, p/s, \$450. Hawthorne, 676-4464. A

**House**, 3-bdrm., inc. lge. master bdrm., family rm., swim pool, 1st mortgage commitment of 80%, appraised at \$45,000. Rolling Hills Ests., 375-8920. A

**Comet**, 1962 Custom 2-dr., reg. trans., r/h, \$425. Buena Pk., 527-1201. A

**Pups**, German shepherd, AKC reg., sire from Germany, \$100. Huntington Bch., 714-962-9649. A

**Boat**, Sabot, windward racing, glass hull, complete, used 1 mo., \$100. Inglewood, 672-7424. A

**Mustang**, 1967 r/h, p/s, disc brakes, air cond., 289 V-8, auto. trans., \$2,995. Chatsworth, 882-0761. A

**Wanted to Buy**

**Transceiver**, FM, fixed or mobile, 2-meter channel, instruments & antennas. Whittier, OX 3-4117. B

**Camping Trailer**, cabover camper or cab high camper, reasonable. Hawthorne, 644-6087. B

**Rifle**, .22 caliber, bolt action, L.A., HO 3-5337. B

**Trailer**, approx. 5'x7' or smaller. Lomita, 326-2590. B

**Golf Clubs**, set of men's, will pay \$35. Hawthorne, 679-2041. B

**Watch**, Mickey Mouse, w/hands that turn, good condition desired. L.A., 478-6864. B

**Sewing Machine**, used. Inglewood, 672-3892. B

**Air Brush**, Thayer & Chandler, w/cups, hose & fittings. So. Gate, 569-7377. B

**Faucet**, glass filling, deck mounting. Downey, 861-6404. B

**For Trade**

**Books**, Blue Chip, 6, trade for 6 Green Stamp books. Manhattan Bch., 376-5139. C

**Rentals Offered**

**Duplex**, 2-bdrm., newly decorated, \$95. Fountain Valley, 714-839-2099. E

**Apt**, deluxe 2-bdrm., furn., lge. pool & patio, closed gar., near El Camino, adults, \$150. Torrance, DA 9-5986. E

**Cabin**, A-frame, furn., sleeps 5, 40 miles from Colorado Springs, near 2 lakes & river, \$70 wk. Granada Hills, 894-1937. E

**Vacation Cabins**, Lake Gregory & Crestline, sleeps 6, make reservations now to Sept., \$60 wk. Venice, EX 1-2040. E

**Studio Apt**, 2-bdrm., 2½ bath, pvt. deck, sub. gar., cpts., dps., elect. heat, d/washer, near San Diego Fwy., adults, lease, \$185. Inglewood, 670-6084. E

**Apt**, 1-bdrm., furn., gar., adults, no pets, \$80 mo. Inglewood, 672-3150. E

**Apt**, 1-bdrm., furn. or unfurn., no children, no pets, \$70 mo. Gardena, 323-5069. E

**House**, 4-bdrm., 2½ baths, cpts., dps., d/washer, fam. rm., washer-dryer avail., 10 min. from Nor. Anaheim. \$225 mo. Fullerton, 714-524-2183. E

**Apt**, deluxe, 3-bdrm., 2 baths, near school, cpts. & dps., bltins, closed gar., pvt. patio, near Northrop, \$175. Hawthorne, 675-7938. E

**Cabin**, Big Bear Lake, sleeps 7 to 9, \$18 w/end; \$50 wk. Downey, 869-6823. E

**Rentals Wanted**

**Roommate**, female, apt, 1-bdrm., \$81.67 mo. Manhattan Bch., 379-2124. F

**Apt**, furn., 2 or 3-bdrm., for high-level exec. & family, for 1 week only 3rd week in August. Sherman Oaks, ST 8-9709. F

**Personals**

We want to thank all those at Northrop who were so kind & gracious in our time of grief over our son & brother who was killed in Vietnam, July 11. God bless each & every one of you. MR. & MRS. RAYMOND L. CENTER, MRS. C. C. REEVES (SISTER). L

Anyone knowing the whereabouts of Jaunita Greenham, missing heir, call Lawndale, 371-9751. L

**For Sale or Trade**

**Volkswagen**, 1962 sedan, '65 eng., \$900 or trade for 1965 or '66 Mustang. Hermosa Bch., 372-5485. M

**Transceiver**, C-B, exec. model, base or mobile, 5 watts, never used, \$160 or trade for car, truck-camper, or motorcycle. Torrance, 325-3724. M

**Volkswagen**, 1966, 7,500 miles, AM-FM, \$1,575 or trade for pickup. Culver City, 838-1219. M

**Pistol**, 22 I.r. Browning auto., only fired once, cost \$67; \$49 or trade for 12 ga. shotgun. Inglewood, 675-6016. M

**Plymouth**, 1965 Belv. II, Mopar's high performance 383 Torqueflite, fully warranted, \$1,995 or trade for foreign car. San Pedro, TE 3-9696. M

**Sailboat**, Cal 24, all fiberglass, sleeps 4, 5 bags of sails, new rig & bot. paint, \$4,400; or trade for larger boat. L.A., EX 8-5019. M

SHARING TIME  
(Continued from page 4)

Sid Powers of Norair's Aerodynamics Research branch says: "The RAX system is in use constantly at Norair. Most of our engineers are using it as a 'super slide rule' in doing the smaller computation jobs of evaluating or solving equations. We feel the evolution of RAX will provide Research and Technology with a powerful numerical tool."

Len Urban, RAX administrator at Nortronics Hawthorne, adds: "Our terminals are real assets for the solution of problems too small and impractical for the 7090-360 computer, yet too large and time consuming for the slide rule and desk calculator."

**Rides and Riders**

**Rides Wanted**

**7 a.m. — 3:42 p.m.**

**Hewes & Chapman Ave.**, Orange. Would like 5 riders. Route—Garden Grove Fwy., San Diego Fwy., Harbor Fwy. to Plant One. Larry Slininger, Norair, exts. 2484, 2485. B

**Avalon & 189 St.**, Gardena. Daniel Beserra, Norair, ext. 2441, 329-8063. B

**Rosecrans & Inglewood**, Torrance. Get off work at 5:42 need ride evenings only. Malcolm Channon, Norair, ext. 4627, 328-2331. B

**7:24 a.m. — 4:06 p.m.**

**Paramount Blvd. & Stewart & Gray**, Downey. Betty A. Keeton, Mariposa, ext. 4281, 869-4608. B

**7:30 a.m. — 4:15 p.m.**

**Marine & Highland**, Manhattan Bch. L. Berg, Norair, ext. 2763, 545-1662. B

**Pacific Coast Highway & Atlantic**, Long Beach. Carol Clement, Norair, ext. 2093, 434-9533. B

**Orange Ave. at Del Amo**, Long Beach. W. H. Covert, Norair, ext. 4714, GA 3-1363. B

**8 a.m. — 4:45 p.m.**

**Pomona Fwy. & San Gabriel Fwy.**, West Covina. R. E. Herfert, Norair, ext. 2515, YO 2-1821. B

**San Diego Fwy. & Wilshire**, Santa Monica or National Blvd., Los Angeles. Paul Petzi, Nor. Haw., ext. 2885, 477-6234. B

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**8 a.m. — 4:45 p.m.**

**Pomona Fwy. & San Gabriel Fwy.**, West Covina. R. E. Herfert, Norair, ext. 2515, YO 2-1821. B

Committee  
Completes  
Training

Fourteen Northrop Nortronics men, members of the Supervisors' Safety Committee at Anaheim, were recognized last month upon the completion of a six-month training program.

Frank Lynch, Nortronics vice president and Anaheim manager, met with the men to present course certificates and special wallet-size cards to each.

This unusual training effort began shortly after the first of the year when it was decided to convene meetings of the committee twice each month in lieu of once per month. The special training was included to cover a special 12-hour National Safety Council course while the men continued to serve their normal duties as safety committeemen.

Alvin Van Der Most, safety administrator, and John Burke of Security conducted portions of the training and special invited authorities were asked to provide special information.

The Supervisors' Safety Committee, and course graduates, were Bill Adams (committee chairman), D. K. Belcher, S. A. Del Grosso, Glen Dory, L. B. Lambeth, F. (Bud) Latchford, jr., R. W. McCarl, William McNabb, Chet Maris, R. L. Shumway, R. F. Stidham, Bill Sturm, J. M. Williams and E. M. Wylie.

**Coin Club Meets**

"Confederate States Currency," a slide set, will be shown at the Northrop Coin Club meeting Monday, August 14, at 7:30 p.m. in the NRC Clubhouse (Hawthorne).

There will be an auction, conducted by Don Marousek, as part of the evening's program. Members are reminded that there will be no second meeting in August.





*WAITING TO SPIKE, two members of lunch time volleyball team at Santa Fe facility keep their attention glued on the ball. Employees at the plant worked together on their own time to*

*paint and outfit two courts used everyday for noontime recreation. Outlying facilities have a varied program of recreation activities suited to the preferences of plant personnel.*

## AT LUNCH TIME

# Action, Not Relaxation, Their Choice

Noon hour at Norair's off-site facilities is often more than just lunch time and relaxation.

With equipment supplied by NRC and enthusiasm supplied by facility personnel, lunch time has become an important part of off-site recreational programs.

Departing from the idea of a slow-paced noontime, personnel at Santa Fe, Torrance, Mariposa, Palmdale and Edwards Air Force Base installations compete in such activities as table tennis and horseshoes.

Table tennis is the main favorite with tournaments and informal games going on at all sites. In fact, the action is so heavy that the tables generally must undergo major overhauls every six months to a year.

Horseshoes is another activity which attracts a large number

## Santa Fe Personnel Sign Up 138 Donors

Northrop Norair personnel manning the Santa Fe facility set a remarkable precedent last month. Forty-three per cent of the total work force there signed to give blood in support of the Northrop Blood Program.

Initially, 138 employees signed donor applications. Personnel transfers reduced the number of individuals available July 17 for a bloodmobile visit to 103. Of these, 36 were deferred.

Which meant the facility force gave 67 pints of blood. That also meant each donor occupied one of the four available beds less than 20 minutes during the five-hour visit.

In another off-site bloodmobile visit, Torrance facility personnel added 36 pints of blood on July 7.

Bloodmobile visits to the Hawthorne complex will be September 6 (at the main plant) and September 8 (at Mariposa).

of participants at all installations.

Recent additions to noontime recreation at Torrance and Santa Fe are weekly movies, often in color. Sports and safety films are primarily shown.

For those with more passive

## Northrop Girls At Huntsville Aid Fund Drive

Rain, not stars, fell on Alabama. It dampened the soil, but not the enthusiasm of 200 staunch fans who gathered for a benefit softball game at Branhan Springs Park, Huntsville.

Northrop Women's Club fielded one participating team, IBM Women's Club the other.

The final score, 19-12, favored Northrop, thanks to two triples each by Lynn Bankowski and Louise McCardle, plus a "flock" of doubles.

The big winner, however, was the Huntsville Boy's Club Building Fund Campaign which received \$229.72 in donations from the affair.

Seven Northrop employees and 10 Northrop wives made up the team. And there was an "umpire" complete with mop wig and impressive "muscles" who looked something like Vince Dauro, Nortronics engineer.

J. A. Barclay, Nortronics-Huntsville manager, is general chairman for the Boy's Club campaign. He was also one of the "most verbal" rooters at the game. The drive is being conducted to obtain funds for a new building to house hobby rooms, game rooms, library, gymnasium, swimming pool and craft shops for use by low-income boys in the area.

tastes, cards, chess, cribbage and dominoes are available. Typical of this kind of amusement is a bridge tournament now being conducted at Mariposa.

Santa Fe enjoys a unique type of activity due to the initiative and support of plant personnel.

With group enthusiasm, they equipped some of the plant's asphalt area with poles and nets for volleyball. That sport is now much in evidence at the lunch time break.

Similarly, the Compton plant now has a softball field, thanks to the same sort of cooperation and willingness which produced the volleyball courts.

## BIG FAMILY

(Continued from Page 1)

open at 10:30 a.m. and remain open until 5 p.m.

Between these times there will be action galore. Games and contests, music and dancing, pony rides and a puppet show, kiddie rides and clowns, and a magic show will be presented.

There will be prizes for all ages and free soft drinks, ice cream and popcorn all day.

The ever-popular hot dogs and suds beverages will be available for 25 cents each, although families are invited to bring their own picnic lunches.

For this "Old Fashioned" family picnic a nominal admission charge of 25 cents will be made for Northrop employees and their immediate family members. Guests will pay \$1 each.

## Travel Club to Meet

The NRC Travel Club will meet Friday at 8 p.m. in the NRC Clubhouse (Hawthorne) to discuss details of the Tahiti and South Pacific tour scheduled to depart Los Angeles on November 3.

# Winter Bowling Leagues Blanket The Southland

It's time to "set 'em up" again as Northrop keggers throughout the Southland prepare to launch their annual winter bowling leagues.

This year, as in years past, Northrop Recreation Councils are planning a little something for everyone—the beginners and the "old pros"; those working days or swing shifts.

At last count there were 19 separate leagues set to roll, from Camarillo to Anaheim; Palmdale to the South Bay.

In the Hawthorne area NRC commissioners from Norair and Nortronics Hawthorne-Palos Verdes have lined up 12 leagues. Up "north" Northrop Venturans will have a choice of three leagues. A similar number of leagues will roll down "south" for Nortronics Anaheim personnel. And out in the Antelope Valley Norair employees plan their usual action-packed mixed league.

Most of these leagues begin action the first or second week of September with reservations for teams or individuals now being accepted.

## HAWTHORNE

Here's the lineup for the Hawthorne area: Monday, a mixed scratch (765) league at Tropicana; Tuesday, a men's (875) scratch classic at Missile Bowl, a mixed five scratch (765) at Del Mar, and a mixed five handicap (765) at Southwest; Wednesday, a men's scratch (850) at Del Mar and a mixed five handicap (765) Missile; Thursday, a mixed five handicap (765) at Missile Bowl, a mixed four scratch (655) Peterson point classified at Gardena, and a mixed four loop for beginners and low average bowlers at Del Mar; Friday, mixed four handicap at South Bay. For night shifters there will be a Wednesday (Thursday a.m.) men's scratch (485) trio at Del Mar and a Thursday (Friday a.m.) mixed handicap (485) trio at Del Mar.

With the exception of the night shift leagues and the Friday night loop at South Bay rolling at 9 p.m., all leagues begin at 6:15 p.m.

Entry forms are now available

## Motherless Kittens Up for 'Adoption'

A couple of cats stayed at Nortronics Palos Verdes last week and they weren't free-loading hippies.

Dale Dahlberg played nursemaid to four, three-week old kittens found motherless by Nortronics employee Russ Gimbrone after they were apparently born under his house.

They were at Nortronics last week because they had to be fed every two hours. Temporary (mom) Dahlberg has found a home for one kitten and would like to do the same for the other three.

Extension 336 is the number to call for Miss Dahlberg and her cats.

through Personnel Activities outlets, commissioners and league officers.

## ANAHEIM

Nortronics Anaheim has mapped its league plans, but is in the process of selecting a bowling establishment at this time.

Plans call for a Tuesday mixed handicap league and a Thursday scratch (825) league, plus a Friday (Saturday a.m.) mixed "Night Owl" league.

Entry forms are available through Personnel Activities.

## VENTURA

Northrop Ventura will stage three mixed four leagues in three different locations with signup information now posted on plant bulletin boards. Wednesday evenings there will be a league in action at Camarillo Lane. On Thursday action shifts to the Conejo Lanes at Thousand Oaks. And on Friday the scene is the Woodlake Lanes in the west San Fernando Valley.

## PALMDALE

Palmdale plans a mixed loop to roll at Oasis Bowl in the City of Palmdale. Contact league officers for information.

## NORTHROP VENTURA WILL HOLD CLASS AT NEW SCHOOL

A class in blueprint reading will be available to Northrop Ventura employees at Newbury Park High School when the new school opens for the fall semester.

The class, open to all employees, will be taught by Mechanical Designer Ben Sumner, a Ventura employee for more than 12 years. Mr. Sumner has had several years of engineering teaching experience, both in California and Washington.

Carl Shoesmith, Industrial Training director, said the class will begin at 7 p.m., September 12 in the school's drafting classroom. No previous registration will be necessary, and students may enroll at that time. The class will be accredited for high school units.

The course will be taught every Tuesday from 7 to 10 p.m., for eight to 10 weeks.

"We haven't decided exactly how long the course will run," Mr. Shoesmith said, "because we want to make it long enough to be meaningful, but short enough to hold everyone's interest."

Mr. Shoesmith said several employees have contacted him, expressing interest in organizing the class. He has asked that section chiefs contact him and advise him of the probable number of students from their areas.

## Ski Club Outing Set

Today is the deadline for reservations to the Water Ski Club's Lake Nacimiento outing on August 4-6.

Contact either Carol DePauw, extension 2563, Norair, or Personnel Activities, extension 2486 (Norair).



# NORTHROP NEWS

NORTHROP NORTRONICS

Published biweekly by Northrop Corporation, Beverly Hills, California

Vol. 25, No. 16

August 16, 1967

## NV Ranked Among Top Producers

Ventura has been commended by the Defense Contract Administration Services (DCAS) Van Nuys District office as an "outstanding producer."

Northrop Ventura is one of only 13 contractors to receive the honor in the Van Nuys district. DCAS, a branch of the Defense Supply Agency, admin-

(See photo on page 4)

isters contracts for approximately 300 firms within the limits of the Van Nuys area.

The designation of outstanding contractors is the result of a new regulation from the Defense Supply Agency to aid in the categorization of contracts handled by DCAS offices.

Evaluation of a particular firm's production ability is just one of five criteria which goes into the point categorization of government contracts being handled by that particular company.

The point total determined by these five standards in turn establishes the degree of government production surveillance the company will work under.

## C-5A Navigation System Scheduled For Flight Tests

Northrop Corporation's inertial-Doppler navigation system, being built for the C-5A Galaxy, will be flight tested in a C-141 aircraft, beginning next year.

The Northrop system and other avionics equipment will be tested by the Lockheed - Georgia Company, Marietta, Georgia.

Following the C-141 flight tests, the U. S. Air Force will flight test the inertial-Doppler system at Holloman Air Force Base, New Mexico, aboard a C-130 aircraft.

Northrop's Nortronics Division is under contract to Lockheed-Georgia to produce the inertial-Doppler system, and also holds a second contract for the production of airborne computers for the Galaxy's Malfunction Analysis Detection And Recording (MADAR) system which will monitor major aircraft systems.

## New Tie Line Links Anaheim to Norair

The telephone tie lines connecting Norair Hawthorne and Nortronics Anaheim became automated this week.

This makes it possible for any extension within the Northrop tie line network to dial Anaheim direct.

From Norair, callers may reach Anaheim by dialing 73 plus the desired extension. From all other Northrop facilities connected by tie lines, callers must dial 773 plus the Anaheim number.

On this same new system, Anaheim telephone users may reach Norair Hawthorne by dialing 7 plus the Norair extension.



*SUPERIOR CRAFTSMANSHIP in producing missile readiness and test equipment for the Polaris and Poseidon programs recently won for Nortronics Anaheim its second Zero Defects award from Lockheed Missiles and Space Company. Lockheed's Wallace Uhorchak (seated*

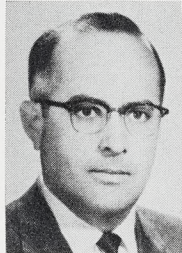
*right) presents certificate to Anaheim Manager Frank Lynch. Looking on (left to right) are Jim Ricketts, Ray Schultz, R. L. Gibney and Frank McNabb of Nortronics, Ed Bress, Howard Hampson and F. O. Stanfield of the Lockheed resident office at Anaheim.*

## POLARIS PROGRAM

### Navy Honors to Needham

Northrop Nortronics' Needham Department has received a U. S. Navy award in recognition of outstanding performance on the fleet ballistic missile program.

The Navy recently selected about 300 contractors for the "41 FOR FREEDOM" award from the more than 20,000 firms which have been involved in the Polaris Missile Program.



Mr. Remillard

The Needham department is a contractor to Sperry Rand Corporation for Type 11 periscope drive systems, used to help navigate the nuclear-powered fleet ballistic missile submarines.

Robert L. Wendt, Polaris manager, Sperry Systems Management Division of Sperry Rand, presented the award on July 25

### Jennings Receives Sloan Fellowship

Robert Jennings, chief of the Analytical Engineering group in the Ventura Division, has been selected to attend the Stanford University - Sloan Program for advanced studies in business management this fall.

Mr. Jennings is the second Northrop executive to participate in the Stanford-Sloan program. Welko Gasich, Corporate vice president and Ventura general manager, recently returned from nine months of study on the Palo Alto campus under a Sloan Fellowship.

Both appointments are part of an effort to emphasize the systematic broadening of management personnel's experience and knowledge through external and on-the-job means.

to Bertrand Z. Remillard, Needham program manager.

The "41 FOR FREEDOM" award is the third honor Northrop's Needham department has received from the U. S. Navy for its performance on the Polaris Program. In 1960, a Certificate of Merit was awarded Needham for producing periscope drive systems, and in 1964, a Polaris Flag was presented to Needham for continued distinguished service to the Polaris Program.

The latest award states that it is given "for distinguished service in the development and deployment of the fleet ballistic missile system."

### Rematch Promises To Be Interesting

The date hasn't been set yet, but the return match promises to be something to see.

It will pit, for the second time, the Norair "Yanks" of the 747 Program Tool and Operation Planning organization and the English "Bulldogs," a group of Britishers providing support for the same program working for Stress Allied, Ltd.

The first match was July 9 at Alondra Park.

It was a softball game, the first ever played by the Britishers. The "Yanks" won in 16 (or so) innings by a score of (approximately) 25-21. (No one paid a lot of attention to details.)

Afterwards, about 75 people, including family members, had a big picnic, the real reason for the gathering.

Now the "Bulldogs" want revenge and have petitioned for a rematch. On their own terms, of course.

The next contest will feature cricket.

## Jackson Elected By Alumni Club

Roy P. Jackson, vice president and Norair assistant general manager, has been elected vice president of the Stanford Alumni Association.

The worldwide organization of graduates and former students of Stanford has more than 80,000 members.

Mr. and Mrs. Jackson have two sons. One of them, David, is a student at Stanford; the other, Peter, is a graduate of the University of California at Santa Barbara. He is in the Peace Corps, awaiting assignment to Nigeria.

Mr. Jackson is a former president of the Orange County Club of the Stanford Alumni Association.

## Nortronics Receives ZD Recognition

Sustained superior craftsmanship in producing missile test and readiness equipment for the Polaris and Poseidon programs has earned another Zero Defects commendation for Northrop Nortronics personnel at Anaheim.

Lockheed Missiles and Space Company (LMSC), prime contractor for both programs, presented the award.

It is the second Zero Defects commendation LMSC has awarded Nortronics for achieving and maintaining an exceptional quality level in producing such equipment. The first was presented in 1965.

Walter Uhorchak, LMSC manager of Supplier Product Assurance, visited Anaheim to deliver the award.

Frank Lynch, vice president and Anaheim manager, accepted with pride for Nortronics personnel.

Mr. Uhorchak also brought along individual recognition for LMSC resident staff members at Nortronics for their part in the total effort.

Howard E. Hampson, resident manager and Frank O. Stanfield, resident Subcontracts representative, participated with Mr. Uhorchak in presentation of awards. Individual awards were made to Ed Bress, senior Product Assurance representative, Henry Levin-ski, Will Wax and Lloyd Daniels, resident Product Assurance representatives.

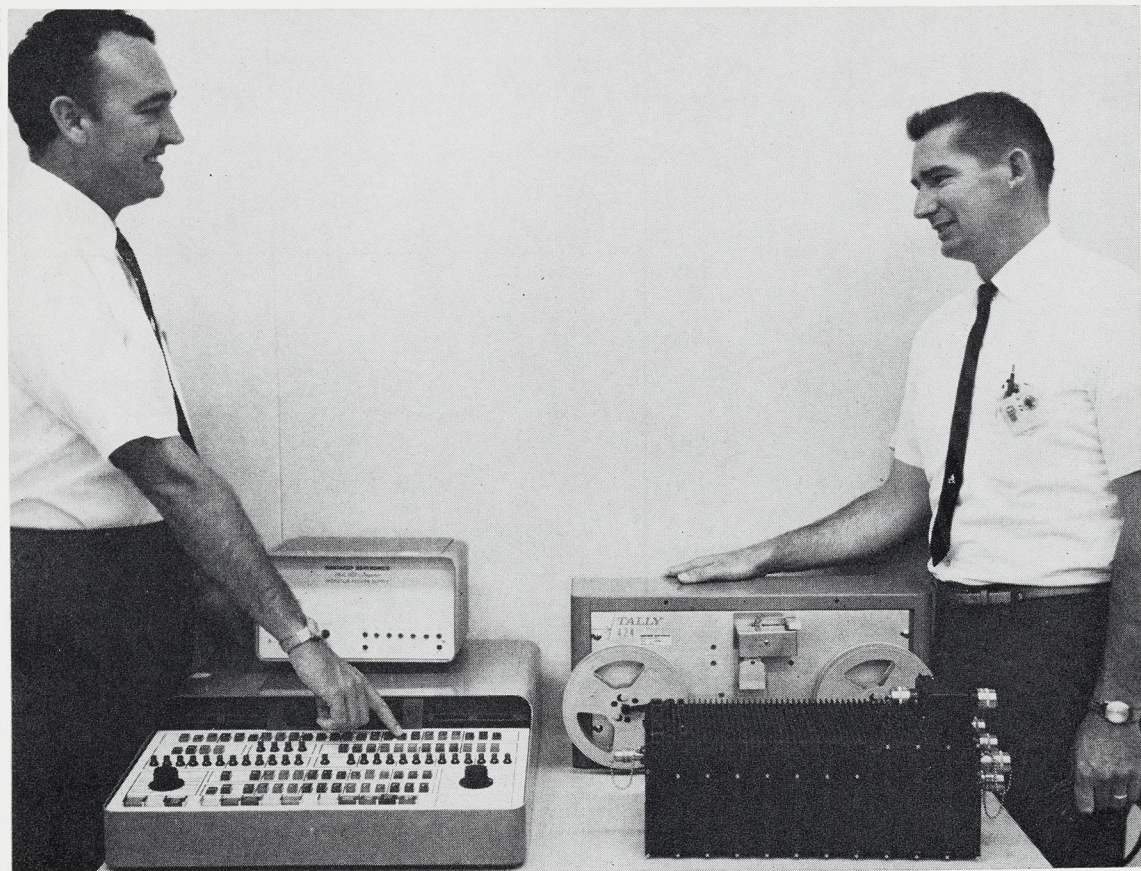
The latest Zero Defects award covers a contract period that began on April 15, 1966, and is continuing.

LMSC has developed a Quality Index system for use in establishing eligibility for Zero Defects consideration. Equipment failure rates are of extreme importance. A detailed Product Assurance (See ZD AWARD, page 2)



*READY TO ROLL—Colonel Paul Yeager (left), USAF, goes over final checklist with Sid Tite, Norair crew chief at Palmdale, prior to departing for Sheppard AFB, Texas, with the final T-38 aircraft for use by German Air Force students in pilot training there. Forty-six T-38's have been delivered for this program.*





**COMPUTER DELIVERY**—Northrop Nortronics' Navigation department recently delivered the first of three NDC-1051 digital computers to ITT-Gilfillan, five days ahead of schedule. The computer (lower left) will be integrated into an ITT radar system. Shown with the

equipment are Ralph Muise (left), project engineer, and Jerry Stephens, lead engineer. The compact NDC-1051 is one of the most advanced digital computers produced. Other system components included in the set are the computer monitor, power supply and tape units.

## FIRST OF ITS KIND

# New Quality, Reliability Manual Debuts

A new Quality and Reliability Management manual, the first of its kind applicable to all Northrop Nortronics West Coast operations, will debut soon.

Publication of this uniform new document marks the culmination of a year-long effort involving representatives of Anaheim, Navigation and Palos Verdes departments.

Quality and Reliability documents are not new at Nortronics.

Each major operating organization has maintained its own up-to-date version in the past.

However, the new manual represents the first attempt to weave many procedures and policies covering various types of contracts into a single general format. It is a unique form of standardization. It reflects a single Nortronics posture in all matters pertaining to Quality and Reliability from initial design through delivery of finished products and field service.

It will contain approximately

250 pages in which well over 100 specific procedures and policies will be outlined in detail in 10 major sections.

Frederick Stevens, Nortronics general manager, called for the new manual one year ago and assigned Gerry DuKet, director of Contracts, to coordinate its preparation.

Mr. DuKet, in turn, enlisted key Quality and Reliability leaders from each Nortronics function to assist.

Initial procedure preparation and coordinating fell to Harry Nuffer and Don Bottolfson of Anaheim and Navigation departments who channeled their efforts through Frank McNabb and Woody Sherwood who head Quality operations at the two locations respectively.

Finalization of procedures and policies fell to Dick Shave and Bill Kendall of Management Systems and Procedures.

Throughout the year major contributions were attributed to R. N. Gibbs of Northrop Sys-

tems Laboratories, Elmer Baldwin of the Navigation department and Dave Kessler of the Anaheim department.

Because the new manual involves guidelines to follow in many types of contracts, early contact was made with governmental agencies responsible for administering Nortronics contracts.

Brigadier General Art Exon, commander of the Los Angeles Defense Contract Administration Services Region (DCASR) and Colonel Fred Sparrevohn, DCASR director of Quality Control, have provided council and guidance.

The men responsible for DCASR Quality Assurance — C. E. (Doc) Turner (Navigation), Lindy Bush (NSL) and Frank Bowman (Anaheim)—are evaluating the finished manual. They will make specific recommendations to Lloyd Shier, chief, Operations Division, DCASR, who will present consolidated recommendations for DCASR to Northrop Nortronics.



**QUALITY, RELIABILITY** Management Manual for use by all Nortronics West Coast operations was completed recently following a year-long effort. Woody Sherwood (right), Gerry DuKet (left) and Frank McNabb (center) presented document to Fredrick Stevens, Nortronics general manager (seated left) and C. E. (Doc) Turner of the Defense Contract Administration Services District-Anaheim.



**IT'S ALL IN THERE**—Among principal contributors to the many tasks associated with completing new Quality and Reliability Management Manual at Nortronics are these men. Seated (left to right) are Don Bottolfson, Elmer Baldwin, Dick Shave and Dick Gibbs. Standing (left to right) are Bill Kendall, Harry Nuffer and Dave Kessler. Manual incorporates policies and procedures covering many types of contracts.

## Returning to College? Registration at Hand

Do you intend to go to school this fall? Under certain conditions, described in Standard Practice Procedures at each Northrop division, employees may be reimbursed for tuition, fees and textbooks.

Further information is available through Industrial Relations.

The following list contains the latest registration times for the fall semester or quarter at major Los Angeles institutions.

UCLA Westwood campus, September 25; UCLA Business Management Program, August 25; University of Southern California, September 13-23; California State at Long Beach, September 19-23, and California State at Los Angeles, September 8.

San Fernando Valley State College and Northrop Institute of Technology, September 18-22; Loyola University, August 15; Cerritos College, August 15-September 11, and Compton College, August 31 and September 5-6.

El Camino College, August 28-31; Golden West College, August 21-28; Long Beach City College, September 11-12; Los Angeles Harbor College, August 14-September 7, and Los Angeles Pierce College, July 26-September 27.

Los Angeles Trade - Technical College, July 17-September 15; Los Angeles Valley College, August 7-September 7, and Santa

Monica City College, August 14-September 1.

California Lutheran College, September 27; Ventura Junior College, August 14-September 6; Moorpark College, August 17-September 8; California State College at Fullerton, September 12-14; and the University of California at Irvine, August 10 to the date of the first class the week of September 18.

## WINFIELD ARATA IN NEW ION POST

Winfield H. Arata, deputy director for Nortronics' Commercial Navigation Systems group, has been named to the national council of the Institute of Navigation, in charge of the Western Region.

Mr. Arata, national vice president for ION, will oversee activities of the organization in the Western United States.

"In the coming year," Mr. Arata said, "we will provide stimulus for growth in the Western Region. One of our goals is to originate periodical meetings in the Los Angeles area, providing interesting speakers in the navigation field."

Mr. Arata is also active in the AIAA, and was recently named associate editor for the new Marine Systems Supplement of the Journal of Aircraft.



**FISH, TRAVEL, GOLF**—Jim Hill (center) retired recently as chief of the Air Force Plant Representative Office's Contracts Division and looks forward to the leisure life. Shown with him at farewell affair are Colonel David E. Galas (left), Northrop AFPR, and Lieutenant Colonel W. O. Ruddock, deputy AFPR.

## ZD AWARD

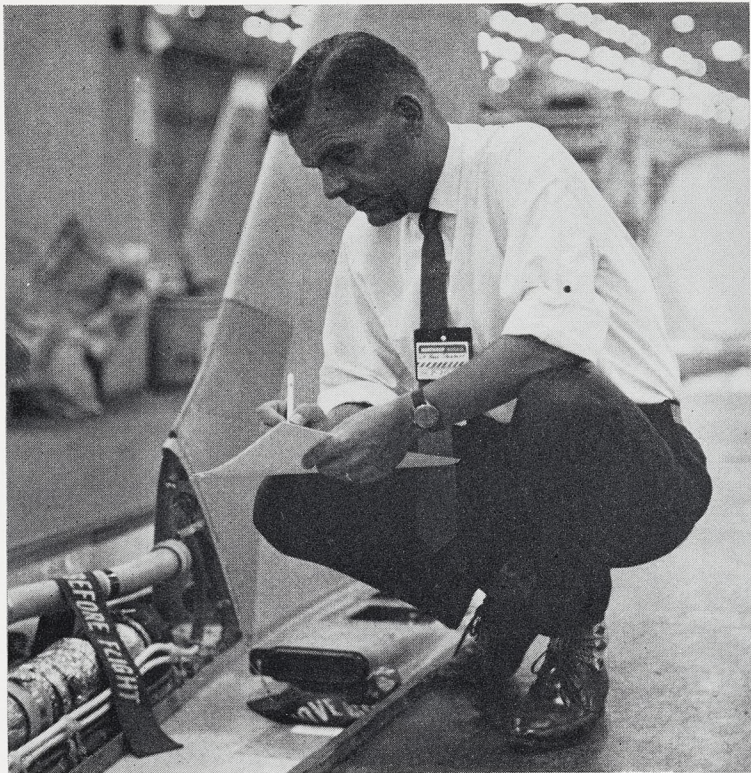
(Continued from Page 1)

survey compiled by LMSC takes into consideration every individual step in the program, ranging from acquisition of materials to delivery of finished products, but also considers such related items as handling, controls, calibration, paper work, communication and many others.

Nortronics and other program participants must meet or better the established Quality Index to earn Zero Defects recognition.

Since April 1966 Nortronics has continued to produce missile test and readiness equipment for use in the Polaris programs, equipment common to both Polaris and Poseidon programs, as well as additional equipment being used in Poseidon developmental efforts.





**ASSEMBLY CHECK**—Lieutenant Hans Steinkopf, Royal Norwegian Air Force, lists serial numbers of critical parts in the aft section of an F-5 destined for delivery to the RNoAF. Lt. Steinkopf is completing a tour of duty at Norair as a special liaison officer responsible for the shipment of completed F-5's and spare parts to Norway.

## RNoAF Officer Likes F-5 But Not Weather

"It is too hot. I can't get used to the weather."

That is a terse and unusual characterization of California—until you consider the source.

The statement was made by Lieutenant Hans Steinkopf of the Royal Norwegian Air Force, who has been on duty at Northrop Norair since late May of this year.

Much of Norway lies above the Arctic Circle and many of Lt. Steinkopf's duties include trips to Palmdale and McClellan AFB, a decided contrast in climate to his homeland.

Lt. Steinkopf, a maintenance

officer by training, acts in a special capacity in his present assignment as a direct link between Norair where F-5's are being built for the RNoAF and the using organizations where they are operational.

At Hawthorne Lt. Steinkopf is immersed in paper work. He compiles records of serial numbers of many parts used on RNoAF F-5's. He also verifies the shipment of F-5 accessories (780 equipment), including such fly-away items as intake covers and safety pins.

In Palmdale Lt. Steinkopf carries out his listing of part numbers of components added to individual airplanes at that facility. He also makes a visual liaison check of finished F-5's prior to shipment to McClellan Air Force Base in Sacramento.

The ever-present lieutenant makes final arrangements at McClellan for the high-flight ferrying of RNoAF F-5's over the great circle to Norway.

Although this is Lt. Steinkopf's first visit to the U.S., it is not his first association with the F-5.

For six months last year he served as maintenance officer for a RNoAF F-5 squadron.

Lt. Steinkopf has a real respect for the F-5, particularly for its ease of maintenance.

Lt. Steinkopf works through Norair's Product Support Field Service and Training organization. The lieutenant's tour of duty is 12 weeks and he will be returning to Norway and his family this month.

The RNoAF plans to maintain a liaison officer at Norair as long as F-5's continue to roll off the Plant One assembly line.

## NRC Councils Plan All-Northrop Luau

An all-Northrop Luau under the sponsorship of combined Northrop Recreation Clubs will be held October 7 at "The Tikis" in Monterey Park.

Tickets will be available at regular outlets shortly after September 1. They sell at \$6 each and cover a full evening of dining, dancing and entertainment.

## Young Scott's TV Appearance Rewarding One

Northrop Norair's Roland B. Scott, jr. will take along a couple of usable mementos and some fond memories when he reports for active duty with the Marine Corps later this month.

Mr. Scott won \$200 and a five-piece set of luggage on the Hollywood Square television show taped early this month for airing August 28-29 (10:30 to 11 a.m.) over NBC.

He also had the opportunity of meeting and talking with Wally Cox, Jim Backus, Dorothy Lamour, Rosemarie, Morrie Amsterdam, Nanette Fabray, Charlie Weaver, Dennis Cole and Jack Carter.

Mr. Scott applied for a chance to compete on the show after some friends had been on it previously. He survived a number of preliminary auditions and eliminations.

Mr. Scott is a recent graduate of the College of Idaho. He has worked two summers in Norair's Production Planning organization.

On August 28 he reports to Quantico, Virginia, as an Air Officer Candidate. Following training at the Officer's Candidate School, he hopes to move on to pilot's training.

Mr. Scott's father, R. B. Scott, is a long-time Norair Industrial Relations employee and a World War II Army Air Corps pilot.

## TRANSIT SYSTEM PLAN

# Edgar Ewing Sees 'Electrified' Future

The idyllic setting of the Northrop Ventura plant seems an ideal place to put out of mind the acute problems of the city and suburbia with their clogged roads and fouled air.

But for a genuinely creative mind, the setting is incidental to the problems, no matter how remote they may seem.

Edgar Ewing is a quiet mechanical engineer who is, as he puts it, "creative-bent." His interest particularly has been attracted by the intensifying discussion of mass transportation problems.

He has conceived a family of electric-powered vehicles and a system using them compatible with present transit facilities.

Electric vehicles are quiet, produce no exhaust, are mechanically simple and offer the prime advantage of the privately-owned automobile, independence of movement.

Mr. Ewing's plan is designed to preserve this independence, overcome the limited range of electrical vehicles but alleviate the present transportation dilemma with its by-products of smog, congestion and delay.

Mr. Ewing does not advocate the immediate abandonment of gas-powered vehicles. His electric system would instead be an effective means of transportation to and from areas of heavy traffic volume such as airports and industrial complexes.

The basic unit in what Mr. Ewing calls "a new generation of electric cars" is the one-person mobile chair. The four-wheeled chair would be much like a very small golf cart which could be enclosed for all-weather use.

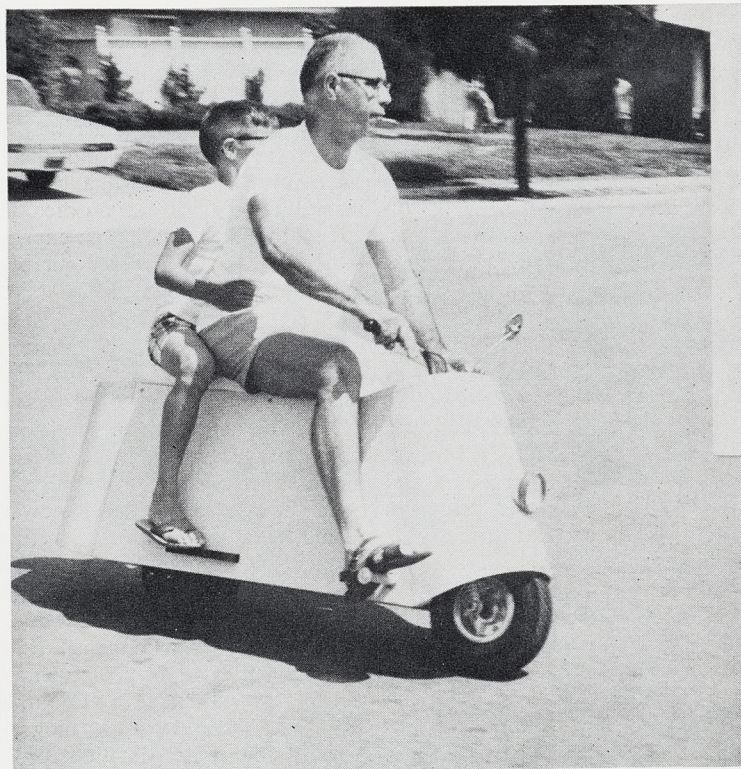
The mobile chair would be sufficient for short trips via sidewalk or special roadway. Their main advantage would be their small size and weight which would make them easily transportable.

The mobile chair would roll right into a larger, electric vehicle known as the pickaback carrier. The pickaback would be like a conventional small car, but would have mobile chairs for seats. They would have a substantial radius of travel and accommodate three to six people.

The smaller electric carts could be carried by large scale rapid transit "ferries" such as trains, monorails or trailer trucks.

This sort of arrangement would be suitable for commuter travel.

Mr. Ewing also envisions another electric car about the size of a compact car but made spe-



**ELECTRIC 'PONY'**—Edgar Ewing and his son zoom around their neighborhood on a battery-powered scooter Mr. Ewing built. The pony is the first vehicle in a series of electric carts and cars Mr. Ewing envisions. A four-wheeled version of the pony, the "mobile chair," would be the basic vehicle of the series, suitable for short trips and easily transported by ferries.

cifically for high speed travel.

This car would be equipped with batteries as an internal power source and a trolley-like pickup for external power when traveling on "electrified" highways. Present freeways could be adapted with overhead power "tracks," says Mr. Ewing.

Mr. Ewing's concept of "closed-loop" travel, constant daily circulation of people between specific points, is the central cog in his electric scheme.

Electric vehicles would be ideal second cars for short trips, a good means of commuting in the system Mr. Ewing proposes, and an alternative to gas-powered vehicles for longer trips, given electrified highways.

The 20-year Northrop employee has built a small two-wheeled electric "pony," a more maneuverable version of the mo-

bile chair. He plans to fabricate a two-place all-weather chair or mini-car soon.

Highly imaginative, Mr. Ewing's system is a feasible alternative to the present inefficient and overwhelmed means of surface transportation.

Mr. Ewing takes his project very seriously. His problem, like many innovators before him, is to get other people to do the same.

## Greenberger Gets New District Post

Henry Greenberger of Nortronics has been installed as administrative assistant governor of Toastmasters District 50. The installation took place at the July council meeting of District 50.

The next area council meeting will be hosted by Northrop Club 212 and will be held in conjunction with their regular meeting on August 17 at the Sojourn Inn, 4330 Century Boulevard.

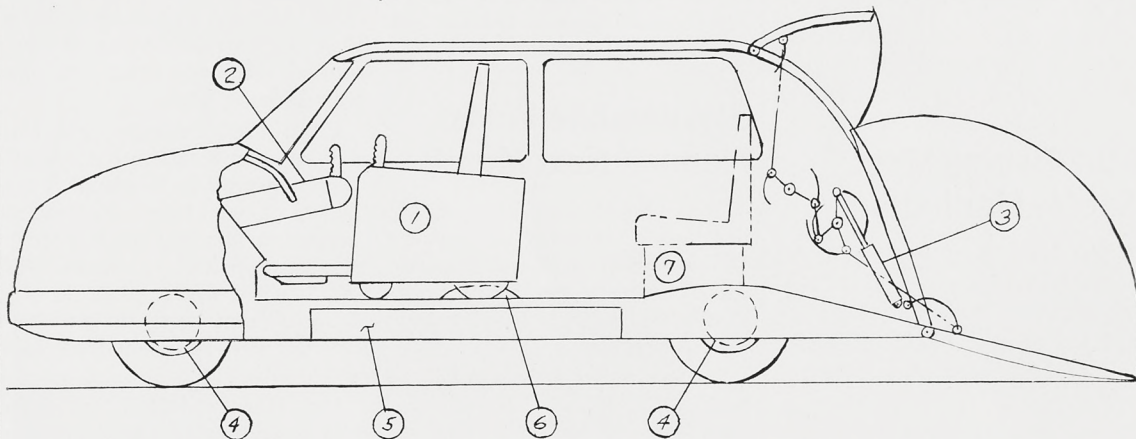
Featured speaker of the meeting will be Verne Reynolds, administrator of Communications and Supervisory Training of Norair.

Membership in Toastmasters clubs is open to all men. Information is available from Mr. Greenberger at SP 2-2321, extension 265.

## 'Millie' Tickets

Order forms with which Northrop personnel may obtain discount tickets to see "Thoroughly Modern Millie" starring Julie Andrews are now available through Personnel Activities.

The special showing is at 5 p.m. September 9 at the Warner Hollywood Theatre, Hollywood. Ticket prices range from \$1.70 to \$2.55 for seats normally selling from \$2 to \$3.



**PICKABACK RANCH WAGON** — Sketch shows electric-powered ranch wagon that would accommodate "mobile chair," a small, four-wheeled electric cart. Both are part of Edgar Ewing's system for improved transportation via

electric vehicles. Numbered details are: (1) Mobile chair in driver's station; (2) control column; (3) entry ramp retraction mechanism; (4) traction motor; (5) quick-change battery; (6) chair lock and (7) foldaway seat.



## Still's 'The Dirty Animal' Hits Careless Pollution

"The only thing wrong with the world is the fact that people live on it." With this opening statement, Henry Still begins a portrait of soiled America in *The Dirty Animal*, his third book.

Released in late July by Hawthorn Books, the work is an indictment of man and his careless pollution of his surroundings.



Mr. Still

Unlike the Muckrakers of the late nineteenth century, Mr. Still offers solutions and gives examples of efforts to combat the urgent problems of water, land and air pollution.

The broad scope of Mr. Still's work rests on a multitude of facts and incidents he has gathered together to dramatize the choking of man's habitat.

This approach reveals the possibility of pollution's final irony that man is in danger of being literally trapped, drowned and choked in his own waste.

The real imperativeness of Mr. Still's book seems to arise from the fact that the changes man

affects in his habitat can cause alterations in global atmospheric and surface conditions—with disastrous consequences.

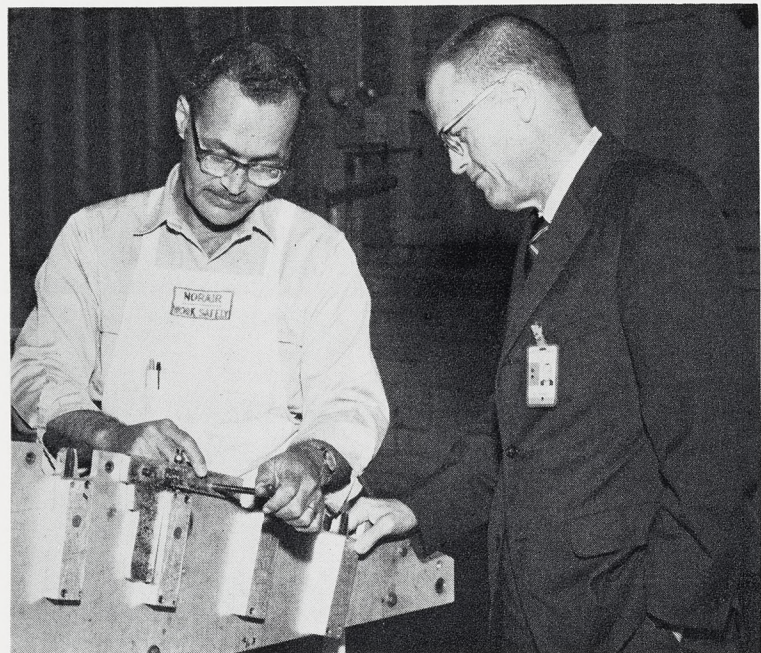
For example, the burning of carbon fuels in the atmosphere can eventually produce a global, insulating layer of carbon dioxide gas that could trap enough energy from the sun to increase surface temperatures significantly.

A rise of seven degrees in the next 30 years would be enough to melt the Polar ice caps and raise sea levels 400 feet.

Mr. Still sets forth some visionary solutions towards the "cleaning up" of America. For urban areas, he sees large nuclear power plants as a particularly effective way of solving pollution problems aside from their great power and water purification capabilities.

Mr. Still's other books are *Will the Human Race Survive?* (Hawthorn, 1966) and *To Ride the Wind* (Messner, 1964), a biography of Glenn R. Martin.

Mr. Still is in charge of Public Relations for Northrop Ventura and is a long-time journalist. He is readying another book for publication sometime next year projecting what life will be like at the end of this century.



**AN IDEA THAT PAID**—John Bell (left), senior jig and fixture builder at Norair, shows Arch Wallen, manager of Manufacturing Engineering, how his "locating jig" helps build tools for the 747 transport program. Mr. Bell earned \$225 for the idea through the Employee Suggestion program.

### BELL PERFECTS HANDY 'LOCATING JIG'

John Bell is a Northrop Norair senior jig and fixture builder with ideas.

One of those ideas paid him \$225 recently in the form of an Employee Suggestion award. It is helping Norair save time and materials and improving quality.

Mr. Bell calls the result of his idea a "locating jig."

Made of scrap material, the device is an aid locating tool now in use by Major Jigs Plant Two in

assembling plates on headers, sub-units of riveting assembly jigs to be employed in the Boeing 747 Program. It helps to quickly locate the plate on the header, clamp it in place and serve as a marker for drilling prior to the installation of dowel pins and cap screws. Prior to Mr. Bell's approved suggestion, this was a time consuming and tedious task performed by layout.

### Bloodmobile Visits Planned Next Month

Two bloodmobile visits to the Hawthorne complex in support of the Northrop Blood Program are scheduled for early next month with signups of volunteers now in progress.

On September 6 the site will be NRC Clubhouse, Hawthorne, from 9 to 11:30 a.m.; 12:30 to 2:30 p.m.; and 5 to 9 p.m.

September 9 the location is the Mariposa facility from 8:40 to 11:20 a.m. and 12:20 to 2:20 p.m.

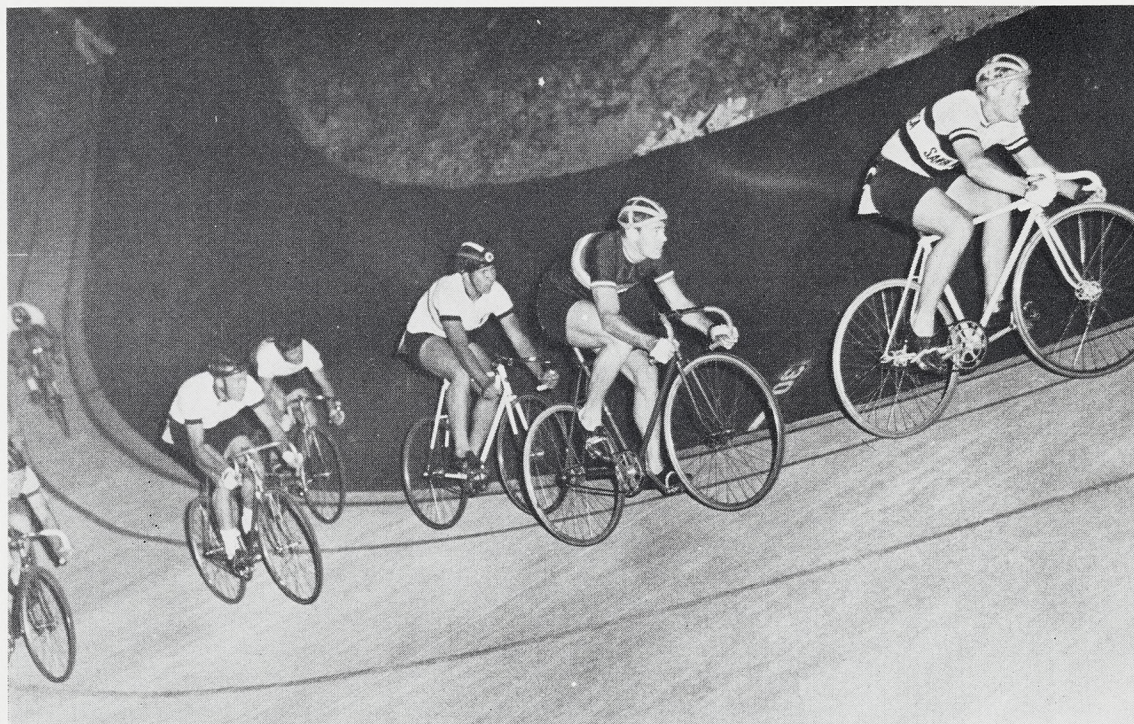
### Surf Fishing Meet Set for Manhattan

The NRC Surf Fishing Club's monthly field meet will be held on Saturday from 4 to 8 p.m.

Location is one half mile either side of Manhattan Beach Pier.

Participants are asked to register at either of Red's Bait Shops in Redondo or with John Pawlicki at the beach.

There will be prizes donated by Red's Bait Shops and trophies furnished by NRC.



**GOING ALL OUT** as he swings into final lap is Barry Harvey (in second place here) of the Canadair, Ltd. staff at Northrop Norair. Mr. Harvey is undefeated in Southern California

cycling events, recently won two national championships in Canada. He was a top cyclist in England before moving to Canada last year. Mr. Harvey races weekly at Encino.

### BARRY HARVEY

## Cycle Champion Is a Man on the Move

There is a bit of a question concerning Barry Harvey: Is he a champion without a country, or one blessed with too many countries?

He is a champion, no doubt about that.

Over the past six years he has pedaled to impressive cycling honors in England, Canada, and, to some extent, Southern California.

But Mr. Harvey's one big ambition—to ride in Olympic competition—has been stymied by the very fact he is a man on the move.

Mr. Harvey is a British subject and is now a Canadian immigrant and is temporarily working in the United States.

He cannot ride for England, since he is not there to compete for an Olympic berth. And he cannot represent either Canada or the United States due to citizenship regulations.

Despite his problems, Mr. Harvey is a friendly, outgoing person with an infectious grin, an ear-pleasing British accent and the modest air of a true champion.

He is a member of the Canadair, Ltd. resident staff at Northrop Norair, working on the CF-5 tactical fighter program.

Athletic ability comes naturally to Mr. Harvey. He was a top soccer and field hockey performer in England before he took up cycling.

Friends introduced him to bicycle racing. He borrowed a bike to enter his first open competition. He won that and has been winning since.

From 1961 through 1964 Mr. Harvey won consecutive "state" championships in England. The British Cycling Federation named him the best track rider in all Great Britain in 1961. He was hopeful for a place in the Olympic team berth in 1964 before a nasty spill sidelined him with injuries.

Mr. Harvey left a job with Bristol Siddeley in early 1966 to move to Canada and a job with Canadair. He has worked at Norair for the past nine months.

Over the recent Independence holiday, Mr. Harvey packed his

racing gear and flew to Winnipeg to enter the Canadian National Championships. He rode against Canada's best who had survived eliminations to enter the big event of the year.

When the final lap was run Mr. Harvey was the new Canadian champion in not one, but two events—the 800-meter sprint and the 1,000-meter time trial.

Although Mr. Harvey will enter an occasional road race, he

really becomes serious when the competition involves sprints and time trials, his specialties. These are run over steeply banked tracks on cycles without brakes or gears with speeds of up to 40 to 45 miles per hour in some cases.

Mr. Harvey has two bikes, one for road races, another for track events. The latter includes three different sets of wheels. He has approximately \$700 tied up in racing gear.

Since coming to California, Mr. Harvey has tried his luck at track events held each week in Encino. Since his return from Canada, he has not been beaten in sprint competition.

While bicycle racing is anything but a national sport in the United States, Mr. Harvey has a very healthy regard for American cyclists.

"You have some very good riders right here in California, you know," Mr. Harvey says. "I think many of them could hold their own in international competition."



**Barry Harvey with medals and sweater he won riding in recent Canadian National Championship in Winnipeg.**



**'OUTSTANDING PRODUCER'**—Welko E. Gasich (left), Corporate vice president and Northrop Ventura general manager, receives a letter of commendation for Ventura from John B. Larch, DCAS administrative contracting officer. Ventura is one of only 13 contractors in its area to receive the commendation. See story on Page 1.



Classified

Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private businesses are not accepted. The Northrop News reserves the right to edit or omit ads. Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 62. Ads are limited to one item and one ad per person each issue. Deadline is noon Wednesday, one week before publication.

For Sale

Home, 3-bdrm., lge. living rm., new modern kitchen, 1¼ baths, all elec., air-cond., d/washer, cpts., dps., wrap-around drive, dble. gar., near El Camino College & Northrop, \$24,500. Gardena, 679-3927. A

Trombone, Conn Connquest w/case, cost \$200; \$150. L.A., 645-7114. A

Fishing Rod, Silaflex, & Penn reel, both never used, \$20. Torrance, 371-1070. A

Surfboard, 8'8" Velzy, laminated skeg, \$40. Anaheim, KE 5-6803. A

Record Changer, Garrard RC-98, 4-spd., walnut base, \$25. P.V. Pen., 377-3806. A

Dehumidifier, auto. control, \$35. P.V. Pen., 377-7670. A

TV, Admiral, b&w, 23", blonde console, \$50. San Pedro, 835-3869. A

Trailer, 14', elec. brakes, water, gas, refrig., sleeps 5, \$300. San Pedro, 833-2301. A

Poodles, toy, AKC reg., white or champagne, avail. Sept. 1, males & females, \$65-\$75. Lawndale, 542-1257. A

Headboard, bookcase-type, w/matching end tables, \$25. Torrance, FR 1-1096. A

Kittens, Siamese, avail. Aug. 20, chocolate point, 6 females, 1 male, 6 wks. old, \$25 ea. L.A., 478-2691. A

Room Cooler, Evaporator, 18 x 23 x 23, 3-spd., \$30. Inglewood, 672-4416. A

Honda, 1966 S-90, 500 miles, \$295. L.A., 661-1813. A

Volkswagen, 1956 sedan, \$250. Hawthorne, 644-1889. A

Plymouth, 1949, '56 eng., r/h, new tires, condenser, points, plugs, battery, paint, \$125. Gardena, DA 4-4507. A

T-Bird, 1957, new porthole top, upholstery & paint, full power, p/b, p/s, auto. trans., 52,000 orig. miles, \$1,795. Inglewood, 756-1812. A

Stereo System, for auto, transistor tape deck, 4 6" speakers, 6 to 12 volt transformer, 1967 Muntz Model M70, 2 tapes, bracketry, \$40. Pac. Pal., GL 4-5985. A

Chevrolet, 1962 Impala, auto., r/h, p/s, 327 eng., orig. owner, 39,000 miles, \$1,150. Long Bch., 596-5488. A

Coupe De Ville, 1964, all extras, air cond., vinyl top, 4 new tires, \$3,195. Long Bch., 591-3968. A

House, 4-bdrm., 2 baths, 2-car gar., 5 yrs. old, h/wood floors, small lot, bltin range, inc. furniture, \$24,500. Redondo, OS 5-7739. A

Rambler, 1959 Super Six, 4-dr., stick shift, o/drive, \$225. La Crescenta, 248-4557. A

Boat, 1961 Buhler Turbocraft, jet drive, 185 h.p. Dearborne, 18½' Thunderbird fiberglass hull, convt. day cruiser, 35-gal. gas cap., bunk pads for 2, inc. trailer, \$3,000. P.V., 377-7908. A

Auto Stereo, Muntz M-70, 4-track w/speakers, \$35. W. L.A., 473-5188. A

Tape Recorder, Phillips, stereo, 4-track, 4-spd., mike inc., \$75. Orange, 633-4900. A

House, 2-bdrm., 2 blocks from Norair, low taxes, lge. patio, block wall rear fence, attached gar., cpts., dps., natural cabinets, many deluxe bltin features, 10% down, \$19,250. Hawthorne, 644-4039. A

Truck, 1964 Chevrolet, ½-ton, & 1963 8' cabover camper, truck, \$1,495; camper, \$695 or \$2,140 for both. Inglewood, 672-0734. A

Motorcycle, Yamaha, 80 cc, dirt bike, 1963, new knobby, \$170. Hawthorne, 675-1336. A

Station Wagon, 1954 Chevrolet, new brakes & muffler, \$155. Manhattan Bch., 379-7752. A

Corvette, 1964 fastback, 327-300 h.p., 4-spd., posi., AM/FM, alum. knock-offs, orig. owner, \$2,950. Hawthorne, 644-5785. A

T-Bird, 1965, full power, auto stereo & fac. air, \$2,550. Inglewood, OR 2-3081. A

Regulator, Aqua-Master, under 10 hrs. use, 30 lbs. of weights w/wt. belt, \$50. Inglewood, PL 5-6655. A

Motorcycle, 1966 Yamaha, 305 cc, 1,285 mi., \$550. Hermosa Bch., 372-3280. A

Ski Catamaran & equipment, Mark 75 eng., lge. wheel trailer, \$975. El Segundo, 322-5434. A

Relax-A-Cizor, orig. cost over \$200; \$75. Hawthorne, OS 5-7740. A

Bicycle, boy's or man's, 26", \$15. Playa del Rey, 823-3947. A

Corvair, 1961 Monza coupe, 4-spd., r/h, w/s/w, \$630. Santa Monica, 396-3216. A

Siding, Redwood, 3,600 ft., ½" x 8" in various lengths, 4' to 15', never used, \$150. P.V. Pen., 377-1075. A

Chevrolet, 1958, recent new trans., & complete tune-up, \$300. Torrance, DA 7-2831. A

Refrigerator, G.E., small apt. size, \$15. Hawthorne, OS 9-6247. A

Station Wagon, 1957 Chevrolet 4-dr., V-8, p/b, p/s, r/h, orig. owner, \$495. Hawthorne, 676-2018. A

For Sale

Boat, 14', 30 h.p., all extras, \$350. P.V. Pen., 541-1123. A

Volvo, 1959, \$175. Hermosa Bch., 376-1557. A

TV, 17" portable, Silvertone, b&w, \$70. Gardena, 327-1147. A

Freezer, 17 cu. ft. Amana, upright, \$75. Rolling Hills, FR 7-3487. A

Slot Cars, controllers, misc. parts & access., sell separately or \$35. Redondo Bch., 376-3058. A

Refrigerator, 2-dr., 18 cu. ft., bottom freezer, 2 yrs. old, cost \$375; \$150. Torrance, DA 3-9887. A

Surfboard, Jacobs, 8'10", \$70. L.A. 756-9532. A

Hearing Aid, never used, w/5 batteries, cost \$150; \$50. Hawthorne, 675-1982. A

Engine, O.H., for 1960 MGA 1600, \$325. Torrance, 370-1838. A

Honda, 1963, C110, 58 cc, \$125. Lomita, 325-4580. A

Studio Couch, 3'x6', 2-cushion, makes into dble. bed, \$25. Hawthorne, OS 6-3792. A

Porsche, 1956, 1600 Super Speedster, \$1,495. Long Bch., 438-8331. A

Planter, artificial tropical palms, approx. 7' high, w/ferns, in lge. ceramic base, \$60. Torrance, 835-5708. A

Saw, skil, elec., many blades, \$20. Diamond Bar, 714-595-3398. A

Honda 50, C-100, never driven, \$200. Inglewood, 674-4285. A

Station Wagon, 1963 Rambler 770 Classic, factory air, auto. trans., \$1,105. La Mirada, WH 1-5549. A

TV, 23" b/w, Silvertone, walnut cabinet, 2 mos. old, \$100. Hawthorne, 644-3007. A

Bench Saw, Craftsman, 10", 2 side extensions, ¾ h.p. motor & roll-away stand, 2 yrs. old, \$85. Woodland Hills, DI 0-6337. A

Occasional Chairs, Danish modern, 2, \$15 ea. Hawthorne, 644-1337. A

Lot, lakeview, new boat slip, Bass Lake, on quiet cove, nice timber, lge. fairly level, \$3,500. Box 1601. A

Boat, 14', 10 h.p. Johnson, trailer, need work, \$75. Lawndale, 644-2106. A

Hub Caps, 4 mag, fit 14" rims, \$35. Lawndale, 370-1963. A

Sailboat, 22' Polaris class, fiberglass, fully equipped, 5 bags sails, sleeps 4, \$2,495. San Pedro, TE 1-9545. A

House Trailer, 38' eastern blt. Stewart Coach, 1-bdrm., full bath, fully furn., 35' x 8' canvas awning, \$700. Hermosa Bch., 374-3638. A

Woodworking Tools, 10" table saw w/1 ext. metal stand, 2 blades, 12" band saw, 4½" jointer, 18" jig saw, all Craftsman, sell separately or all for \$150. Hawthorne, 676-9518. A

Pickup, 1966 ½-ton Chevrolet, & MacDonald camper, 21,000 miles, factory r/h, other extras, \$2,100. Lomita, 325-1179. A

Scoops, rear brake & ventilation, for 1967 GT-500 Shelby Mustang, \$35 ea. pr. Bev. Hills, 676-6188. A

T-Bird, 1955, 390 cu. in. eng., 12,000 miles, Warner hvy. duty trans., 3-spd. w/overdrive, Hurst synchro lock, other spec. equipment, \$1,795. Newport Bch., 837-8263. A

House, 3-bdrm., 2 baths, cpts., dps., patio, dble. gar., 1½ yrs. old, view lot, adjacent to golf course, \$18,750. Corona, 735-5668. A

Pups, pointer, crossbred, 5 wks. old, AKC, \$10 & \$15. Santa Monica, 398-5494, 393-6931. A

Boat, 18' Catamaran, 8' beam, bait tank, ladder, many other extras, 250 h.p. Evinrude motors, completely rebilt., less than 20 hrs., tandem wheel trailer, \$1,500. Orange, 714-532-3743. A

Speakers, 2 8", in cherrywood enclosures, \$10 ea. Manhattan Bch., 376-5139. A

Surfboard, Hobie, 9', \$50. Anaheim, 776-1322. A

Ironer, rotary-type for 120v a.c., \$35. Whittier, OX 3-4117. A

Dodge, 1960 Phoenix, 383 V-8, auto. r/h, 4-dr. h/top, 45,500 actual miles, \$450. Lawndale, 542-2714. A

TV, 23" Westinghouse console, picture tube 1 yr. old, \$30. Redondo Bch., 644-1889. A

Sweepmaster, Bissell's, practically new, \$8. San Pedro, TE 1-3045. A

Sewing Machine, Singer, model 328 cam zig-zag-type, 2 yrs. old, \$75. Manhattan Bch., FR 9-1811. A

Washer, Bendix, 24", \$20. Gardena, DA 4-7059. A

Oldsmobile, 1966 Dynamic 88, Holiday cpe., still in warranty, 420 cu. in. V-8 eng., air cond., p/s, p/b, auto. trans., r/h, \$2,995. Rowland Hts., 964-7802. A

Dining Room Set, maple, \$90. Torrance, 329-9021. A

Station Wagon, 1963 Rambler 770, auto., low mileage, \$1,099. Yorba Linda, 714-528-9227. A

Lawnmower, \$10. Inglewood, 672-3460. A

Home, 2-story on corner lot, 4-bdrm., 2 pullman baths, family rm., cpts., dps., fire-place, patios, sprinklers, 3-car gar., \$3,500 equity, \$31,500. La Palma, 714-827-1958. A

Furniture, French period, 35 yrs. old, matching sofa & chair, coffee table, walnut, kidney shaped, 2 end tables w/inlaid tops, have to be refinished, \$150. Gardena, DA 4-6390. A

Folk Guitar & case, \$30. Rolling Hills Estd., FR 5-8536. A

Truck, 1955 Ford pickup, V-8 eng., \$250. Compton, 632-7635. A

Motorcycle, Suzuki, 1966, 150 S32-2, \$280. P.V., 378-1561. A

For Sale

Acreage, 2½ acres, near Willow Springs, on good road, \$17,500 dn., \$17,500 mo., \$1,750. Torrance, FR 8-1026. A

Movie Camera, Bell & Howell zoomatic, w/projector, Revere & portable screen, \$200. Manhattan Bch., 545-4694. A

Dishwasher, portable, use with any std. kitchen faucet, used only 1 year, \$50. Marina del Rey, 823-3870. A

Motorcycle, 1964 Honda Dream, 305 cc, twin, \$275. Hawthorne, 676-7971. A

Volkswagen, 1964 1500-S Variant, \$1,000. Redondo Bch., FR 2-8650. A

Volkswagen, 1966 Sunroof, radio, 20,000 miles, \$1,600. L.A., 473-7756. A

Income Property, 3-bdrm. & den, plus 2-bdrm. duplex on large lot, nice yard area, near Northrop, \$55,000. Hawthorne, 675-3866. A

Tenor Saxophone, 1 yr. old, \$150. Hawthorne, 675-7375. A

Plymouth, special deluxe, 1949, new battery, good tires, radio, \$80. Downey, 869-1806. A

Sailboat, Lido 14, 2 sets sails, trailer, cover, \$950. Rolling Hills Estd., FR 8-2190. A

Volkswagen, 1966, 7,500 miles, vinyl int., \$1,495. Torrance, 838-1219. A

Tricycle, large, \$5. Inglewood, 378-6325. A

Dog, collie, tri-colored, 2 yrs. old, female, AKC, \$60. Lawndale, 675-9446. A

House, 3-bdrm., den, 2 baths, sprinklers, unattached covered patio, 2-car gar., block wall fence, \$21,995. Inglewood, 671-8401. A

Target Rifle, mod. 75 .22, \$65. Hermosa Bch., FR 4-4792. A

Lot, fully improved, level, 75 x 150, \$16,950. P.V. Estd., FR 7-4943. A

Hide-A-Bed, Simmons, dble. size, slip cover, \$75. Torrance, 324-2992. A

Dresser, dble., mahogany, lge. mirror, chest-of-dwr.s. & table, \$75. Lawndale, 675-2305. A

Tire, Firestone, b/w, 7x14, 50 miles, cost \$22; \$12. Torrance, 327-2831. A

Cadillac, 1966 Coupe DeVille, r/h, full power, climate control, 4 new tires, 23,000 miles, \$4,350. L.A., 474-8564, 479-5566. A

Volkswagen, 1966 Sunroof, FM-AM radio, extra speakers in doors, wood steering whl., under seal, camber compensator, new battery, \$1,550. Lawndale, OS 6-5425. A

Oldsmobile, 1963 F-85 Cutlass, r/h, b/seats, floor console, \$985. San Pedro, 832-1886. A

Roller Cam, Isky 505, complete kit, cam, 16 roller tappets, push rods, inner & outer racing valve springs, timing gear & cover, \$125. Gardena, DA 3-4418. A

Poodle, apricot, male, 8 mos. old, orig. cost, \$100; \$50. Box 1602. A

TR-4A, 1966 convt., sell as is, damaged, submit bid, Norair Credit Union, ext. 1117. A

Lot, in California City, worth over \$3,000; \$400 for my \$1,000 equity & \$35 mo. Redondo Bch., 370-9138. A

Motorcycle, Yamaha, 1966, YDS-3, 250 cc, \$425. Torrance, DA 3-7544. A

Engine Parts, Briggs & Stratton 2 h.p., almost 2 complete engs., \$10. Glendale, 246-4495. A

Sailboat, 16' Seacoaster, fiberglass cabin, sleeps 2, Dacron sail, alum. spars, 5 h.p. Golden Jet motor, running lights, w/trailer, \$1,500. Manhattan Bch., 379-3086. A

Ford, 1959 2-dr. h/top, r/h, \$139. L.A., PL 5-5584. A

Kittens, Siamese, 8 wks. old, male, \$10. Long Bch., 438-9700. A

Chevrolet, 1959 Impala, rebilt eng., auto. trans., r/h, p/s, mag wheels, \$600. P.V. Pen., FR 7-5075. A

Trailer, 35' & lot, set up complete, Lake Isabella, \$4,750. Gardena, 635-3127. A

Chevrolet 1964 Impala, h/top, 289, htr., \$1,495. Van Nuys, PO 6-1425. A

For Sale

Chevrolet, 1956 sedan, r/h, Hyd., \$75. Gardena, DA 9-6848. A

Cadillac, 1957 sedan, DeVille, 74,000 actual miles, new tires, brakes, carb., fuel pump, w/EZ lift trailer hitch, \$295. Inglewood, 671-0835. A

Truck, 1956 Ford, ½-ton pickup, stick shift, 6 cyl., \$275. Redondo Bch., 372-8502. A

Wanted to Buy

Weight Lifting bar & set. Inglewood, 672-5583. B

Trailer, any kind of 18' or larger, not over \$300. Torrance, 375-6071. B

Guitar or Amp., elec., Fender pref., or both. Hawthorne, OS 9-5704. B

Refrigerator, Servel, gas, dble. door, ice-maker preferred. Torrance, FR 5-9946. B

Pup, thoroughbred Doberman, not champ. stock, 6 wks. or 3 mos. old, not more than \$50. Compton, 750-9763. B

Hi-Fi Equipment, Dynakit Mark III amplifier, Dynakit PAS-2 preamplifier, AR-IW bass speaker, Janzen electrostatic speaker. West L.A., 836-5575. B

Basketball Backboard & goal, used. Rolling Hills Estd., FR 5-9689. B

Free (To Be Given Away)

Dog, German shepherd, female, spayed, 4½ yrs. old, champ. stock, obedience trained. Thousand Oaks, 805-495-6309. D

Rentals Offered

Apt, furn., deluxe 2-bdrm., lge. pool & patio, closed gar., near El Camino, adults, \$150. Torrance, DA 9-5986. E

Bachelor Apt, single, utilities furn., employed lady preferred. \$60. Hawthorne, 754-9866. E

House, 3-bdrm., 2 baths, bltins, fireplace, cpts., dps., fenced yd., 3 yrs. old, avail. Sept. 11, in Huntington Beach, \$155 mo. DA 9-9464, DA 7-8994. E

Apt, cpts., dps., bltins, garb. disp., closed gar., 5 min. to Nortronics P.V., 15 min. to Norair, 1-bdrm. furn., \$105, unfurn., \$85; 2-bdrm. furn., \$145, unfurn., \$125. Torrance, 375-2091, 375-9397. E

Cottage, Ocean Beach, San Diego, make reservations now, \$30 w/end; \$65 wk. Buena Pk., 714-826-2007. E

House, 3-bdrm., 1½ baths, den, 2-car gar., fenced back yard, cpts., 1 yr. lease, \$140 mo. Anaheim, 714-534-4031. E

Vacation Cabins, Lake Gregory & Crestline, sleeps 6, make reservations now to Sept., \$60 wk. Venice, EX 1-2040. E

Studio Apt., 2-bdrm., 2½ baths, pvt. deck, sub. gar., lvy. features, cpts., dps., elec. heat, d/washer, near San Diego Fwy., adults, lease, \$185. Inglewood, 670-6084. E

Apt, deluxe, 3-bdrm., 2 baths, near school, cpts. & dps., bltins, closed gar., pvt. deck, near Northrop, \$175. Hawthorne, 675-7938. E

Apt, 2-bdrm., unfurn., cpts., dps., bltins, closed gar., pvt. balcony, hobby shop, \$130 mo. Torrance, FR 5-0867. E

Cabin, Big Bear Lake, sleeps 7 to 9, \$18 w/end; \$50 wk. Downey, 869-6823. E

Rentals Wanted

House, 2-bdrm., on own lot w/gar., in Hawthorne or Inglewood, 1 small child, under \$135. Inglewood, ST 9-4593, 671-9216. F

Child Care Offered

Pre-school Child Care, 3-5 yrs. olds, for in-home, systematic teaching program as well as day care. Inglewood, 754-0227. G

Child Care Wanted

Pre-school child, in my home. Hawthorne, 679-4850. H

Rides and Riders

Rides Wanted

7 a.m. — 3:42 p.m.

Arbor Vitae & Prairie or Hardy St. & Prairie, Inglewood. David R. Miller, Norair, ext. 1174. A

Hewes & Chapman, Orange. Route—Chapman to Newport Fwy. to Garden Grove Fwy. to San Diego Fwy. Wish to pick up 5 riders. Larry Slininger, Norair, ext. 2484, 2485. A

7:15 a.m. — 4 p.m.

Cerise & 139th, Hawthorne. Need ride evenings only. Linda Chamberlain, Nortronics Haw., exts. 867, 868; 679-2319. A

7:30 a.m. — 4:15 p.m.

Marine & Highland, Manhattan Beach. Louise Berg, Norair, ext. 2763, 545-1662. A

Compton Blvd. & Inglewood Ave., Lawndale. Louise Eichorn, Mariposa, ext. 4165, 679-4831. A

8 a.m. — 4:45 p.m.

Main & Mariposa, El Segundo. Lucile Binning, Norair, ext. 1777. A

Rides Offered

7 a.m. — 3:42 p.m.

Hewes & Chapman, Orange. Route—Chapman to Newport Fwy. to Garden Grove Fwy. to San Diego Fwy. Wish to pick up 5 riders. Larry Slininger, Norair, ext. 2484, 2485. A

Child Care Wanted

Babysitting, pre-school children preferred, reasonable rates. Hawthorne, 379-5712. H

Lost

Charm Bracelet, 14K gold, 5 charms. Gardena, 323-8442. J

Found

Pictures, 3 5x7, children's, found outside Plant I Lobby, Lost & Found, ext. 1972. E

Personals

My sincere thanks to all who so thoughtfully expressed their sympathy during the time of grief recently underwent by myself & family. It was gratefully received. ALLEN (ROBBIE) ROBINSON. L

I wish to thank all the people at Northrop for the cards, letters & messages to my brother, Albert Barnes Anderson, during his illness. His son, Steven; daughter, Laurie; father, Wendell Anderson, sr.; & I wish to express our deep gratitude for the generous donations to the American Cancer Society when he passed away. WENDELL ANDERSON, JR. & FAMILY. L

To all our friends at Northrop: our sincere thanks for the kindness extended to us during the recent loss of our beloved mother. BARBARA, KATHLEEN & STEVEN EARLEY. L

FLYING COMMANDER of Tactical Air Command's 12th Air Force, Major General H. G. Thorne, jr. (center) is shown at Williams Air Force Base, Arizona, following recent F-5 ori-

entation flight with Lieutenant Colonel Alfred H. Hopkins, commander, 4441st Combat Crew Training Squadron (right) and Norair's Hank Waklee.



## NRC Waives Reservation Requirement

Don't let the theme—an Old-Fashioned Family Picnic—misguide you.

Things will be jumping for all ages August 27 when Nortronics Anaheim NRC stages a family get-together at Swiss Park, Duarte.

Games and contests, a magic show, clowns, a puppet show, pony rides, kiddie rides and music for listening and dancing are planned.

There will be free popcorn, soft drinks and ice cream. Sudsy beverages and hot dogs, at 25 cents each, will be available or bring your own lunch, if you like.

Reservations, requested initially for planning purposes, have been waived. Just call at Personnel Activities and pick up the tickets you need. Nortronics employees and members of their immediate family pay just 25 cents each; guests, \$1 each.

## Square Dance Club Plans 'Hobo' Night

The Square Jets, NRC-sponsored square dance group in the Hawthorne area, have taken advantage of the slower summer time pace to accelerate their activities.

On July 15 more than two squares of dancers took part in a Country Fair staged by the Church of Religious Science, Inglewood.

And on August 18 the group will stage a Hobo Dance at 8 p.m. at Hill's Rancho, Gardena, with hobo stew heading the menu. This is in addition to regular dances at the same location set for September 1, 15 and 29.

Dancing for visitors at the July 15 fair were Chet and Lela Parish, Jack and Ruby Sherrill, Dick and Marilyn Heise, Taaffee Huey, Richard Nurton, Lu Smith, Jim and Irene Stein, Charlie and Kitty King, Jim Wildes, John Paris and Lois Paris.

## BIG NRC 'FUN FAIR' SUNDAY AT POMONA

From the opening of the gates (at 10 a.m.) until closing (at 6 p.m.), there will be action galore Sunday at the NRC-sponsored Northrop Fun Fair set for the Los Angeles County Fairgrounds, Pomona.

NRC Councils at Norair and Nortronics Hawthorne-Palos Verdes are staging the big family event.

Music will be presented throughout the day by the Majestics and the Chapter VI bands. MOHALA and Her Hawaiian Dancers will appear at 10:30 a.m. and 3:30 p.m. The Rhythm-

## Winter Bowling Nears

Nortronics Anaheim keglers will again utilize Carter Bowl, Fullerton, for their winter leagues. A mixed league will roll Tuesdays, with a men's scratch loop set for Thursdays. Leagues open September 12 and 14 respectively.



AFTER 56 MILES, 24 members of NRC sponsored Boy Scout Troop 262 and their advisors still look ready to go. The group packed through Angeles Forest for seven days, mostly on moun-

tain trails only wide enough for one hiker. One of the advisors was George Larsen (standing in the third row, second from left).

## A 56-MILE WALK

# Scouts Tour Angeles National Forest

Boy Scout Troop 262, sponsored by NRC at Northrop Norair, recently packed 56 miles through a rugged section of Angeles National Forest over the 9,400 foot Mount Powell.

George Larsen, Northrop representative to Troop 262, accompanied the group of 24 Boy Scouts and five advisors on the seven-day trip which stretched from July 18-25.

The hikers carried everything they needed, including food, bedding and extra clothing. Mr. Larsen, a Manufacturing Research and Development engineer, said the trip went off without a hitch and only one case of blisters.

The hikers, many of them 11-year-olds, slept out every night in sleeping bags and arose before dawn to avoid much walking during the heat of midday.

The troop annually takes a summer packing trip to such far-

flung places as Yosemite Park and Yellowstone Park.

This year's outing was preceded by three "shake down" hikes to Firestone Scout Reservation, Circle X Ranch and along a tributary of the San Gabriel River.

These overnight trips were designed to break in the Scouts'

hiking shoes, give them practice in carrying a pack and teach them what to take in their back packs.

Troop 262, sponsored by NRC for 10 years, has taken many top awards in South Bay Boy Scout competition. With 42 members, the troop finances many of its activities through the sale of Christmas trees.

## TWO YOUNG 'TARS'

# Gordons Love Fishing

BY BEN SUMNER

Most sea stories concern "old salts," but this one is about two "young salts," Tom and Jim Gordon.

Twelve-year-old Tom and 11-year-old Jim are the sons of Bob Gordon, an engineering checker in Landing Systems Design at Ventura.

Mr. Gordon is a fishing enthusiast who has passed on his love of the water to his sons. The boys have been "young salts" since they were three and four-year-olds, first in Massachusetts and now in California waters.

Mr. Gordon owns a cabin cruiser and regularly visits the Channel Islands, particularly Ana-

capa, and Catalina Island with his youthful crew in search of fish.

When returning, Mr. Gordon says, "I don't have to worry about landings. I just steer in and they do the rest." With one of the pair wielding the boat hook and the other acting as "jump man" onto the landing, tying up is routine.

The Gordons will go far for good fishing. Recently, they were part of a group from the Ventura Recreation Club that sailed from San Diego on a charter fishing trip to the Coronado Islands in Mexican territory.

With the first light, the Gordons had their lines over the side and they caught halibut and bonita which produced more than 24 pounds of fillet for the freezer.

Something of a distinction was earned by Bob when he hooked the first halibut of the day, a one-half pounder which he displayed with mock pride to his fellow anglers.

Meanwhile, Tom and Jim were pulling in fish of considerably larger size. However, they didn't bait their father about their impressive haul.

As members of the same crew, they all pull together even if they do come up with different results.

## NVRC Picnic Promises A 'Circus Air'

The Bob Baker Marionettes and the Great Kirkham Magic Show will headline activities at the Northrop Ventura picnic September 9, at Sunset Farms, 16303 Foothill Boulevard.

The Farms, located adjacent to the intersection of the San Diego and Golden State Freeways, will be open from 10:30 a.m. to 5 p.m. for the picnic which has all the airs and attractions of an old-time circus.

A hot dog-hamburger dinner will be served from 11 a.m. to 3 p.m. The dinner is included in the admission price which is 50 cents for employees and family; 25 cents for children six to 16 and \$1 for guests.

Children under six are admitted free.

For the kids there will be pony and rocket rides and a chair swing. A stilt walker with a monkey and two clowns with balloons will parade around the grounds all day.

Games include a bingo game with prizes for adults, a ladies' nail driving contest, a candy scramble and a kids' pie eating contest.

Bean guessing and time telling contests will also be offered. There will be plenty of ice cream available along with swimming in the Farms' pool and a registered nurse for any mishaps incurred in the fun and games.

## NRC Flag Football League Now Forming

Norair's NRC will again sponsor a flag football league this fall as part of its intra-company sports program.

Games will be played at Alondra Park on Saturday mornings. The first scheduled practice game is slated for September 9.

Teams will be composed of seven players with 15 allowed on the roster. A meeting of all team captains and managers will be held in Tom White's office in the NRC Clubhouse (Hawthorne) on Thursday, August 17 at 4 p.m.

Flag Football Commissioner Larry Bender suggests that interested gridgers form their own teams or the nucleus of a team before the managers' meeting.



Tom and Jim Gordon, sons of Northrop Ventura's Bob Gordon, show results of their fishing skills.

## Smoothsayers Club Awarded Charter

"Smoothsayers," dedicated to the elimination of "awkward, self-conscious speech," has been chartered by Toastmistress International.

Meetings convene at 6:15 p.m. every second and fourth Wednesday of the month at Dandel's Restaurant, Western Avenue at 120th Street.

New members are welcome. Call Personnel Activities, at Norair, ext. 2486, for information.

## Karate Class to Begin

The NRC Karate Club has scheduled a new series of beginner's classes in karate.

Classes are held at the NRC Clubhouse at Hawthorne on Tuesdays and Thursdays from 5 to 6 p.m. Cost is \$10 a month.

For further information contact Instructor Willie Norris, Norair ext. 4334.



# NORTHROP NEWS

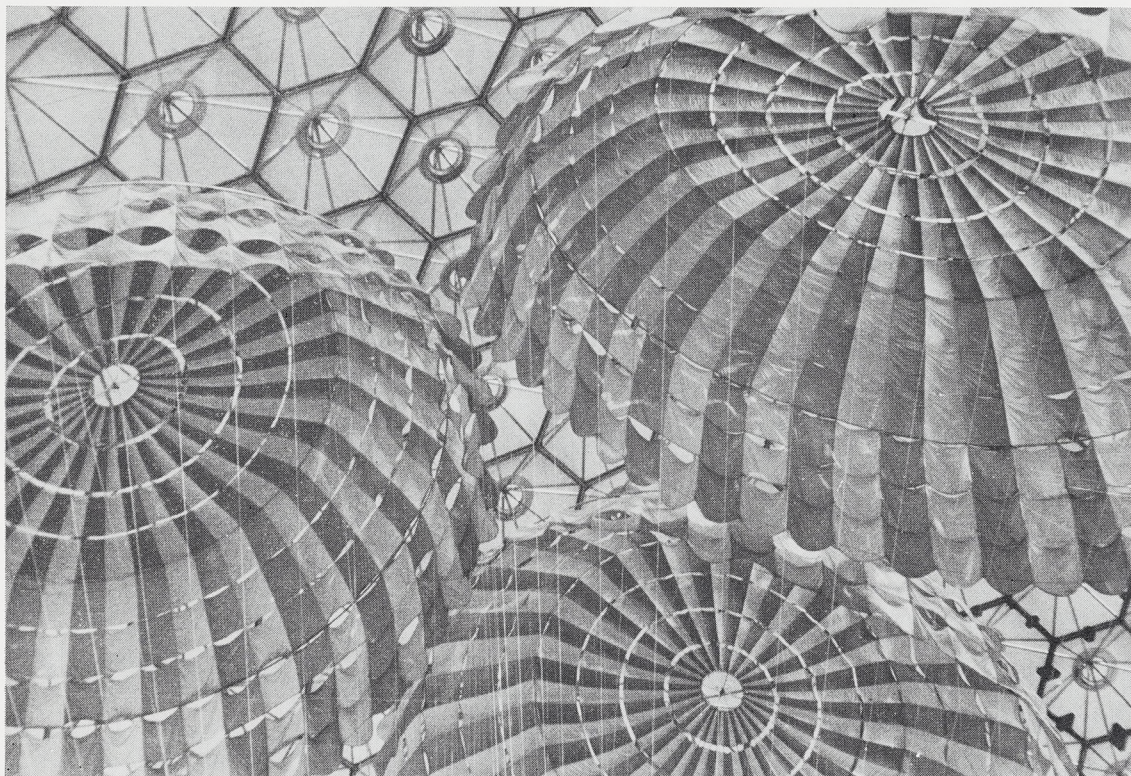
## VACATION EDITION

Because of vacations on the Northrop News staff, this is a combined special edition.

Published biweekly by Northrop Corporation, Beverly Hills, California

Vol. 25, No. 17

August 30, 1967



**APOLLO AT EXPO**—The orange-and-white triple parachute system for America's Apollo Program covers the United States pavilion at Montreal's Expo 67 like a huge umbrella. The

parachute system—like those of the earlier Mercury and Gemini programs—was built by Northrop Ventura. The parachutes are suspended from the top of the dome-like pavilion.

## New Records Posted For Sales, Earnings

Northrop Corporation this week reported record sales and earnings for the fiscal year ended July 31, 1967. Net sales and other income for the year was \$471,000,000, an increase of 31 per cent over the previous year's sales of \$359,000,000.

Aggregate net earnings of the aerospace firm, which produces aircraft, communications and electronics systems, were \$12,568,000, an increase of 20 per cent over the previous year's earnings of \$10,474,000.

Earnings per share were \$2.86, 14 per cent above last year, despite a larger number of shares outstanding and after dividends \$341,326 on the company's new preferred stock. The per share earnings were based on the computed average of 4,279,000 shares outstanding during the year, and compared with \$2.51 per share on the computed average of 4,170,000 shares outstanding for the previous year. Reported earnings per share last year were \$2.49, based on 4,207,000 shares outstanding at July 31, 1966. The increase in shares during the year was due largely to the conversion of debentures.

"Our record results reflect improvements across the board particularly in our communication systems business," Thomas V. Jones, president, said. "The figures, however, have not yet begun to include any significant sales or earnings from the Boeing 747 airplane program or from work on the navigation system for the Lockheed C-5A logistic airplane. Both of these will be booked as deliveries begin."

"We expect improvement to continue in the new fiscal year. The first quarter should be better than the first quarter of last

year and the year as a whole should bring increases in both sales and earnings," Mr. Jones said.

Backlog of orders at July 31, 1967 amounted to \$603,000,000, an increase of 5 per cent over the \$574,000,000 backlog of a year earlier.

## AIAA Convention Draws Quintet From Northrop

Five Northrop men will be key participants in this year's national meeting of the American Institute of Aeronautics and Astronautics, to be held October 23 through 27 in Anaheim.

Four of them will present papers at the fourth annual convention. The other, Winfield H. Arata, jr., deputy director of the Nortronics Commercial Navigation Systems group, will be both a theme chairman and a panel discussion participant.

In addition to Mr. Arata, Northrop participants include Dr. George Sullivan, Nortronics director of Life Sciences; Steig Gavelin, chief of the Nortronics Marine Sciences Applications Engineering group; J. Stalony-Dobrzanski, a member of Norair Technical management; and Arthur M. Jackes, Norair Advanced Aircraft consultant.

Mr. Arata, who has participated in the AIAA convention for several years, will be a panel discussion participant. (See AIAA, page 4)

## NV Production Operations Saves Division \$442,000

During the 1966-67 fiscal year, the Production Operations department at Northrop Ventura pledged itself to save \$400,000 as its portion of the Division's Cost and Management Improvement Program.

Through the support of many

See photos, page 4

members of the department — more than 25 per cent of Production Operations employees submitted suggestions—the goal was surpassed, as total confirmed savings reached \$442,000.

The most successful suggestions were those submitted by Glen Estes (\$144,000 in savings), Bill

Lancaster (\$41,059) and Mac Robinson (\$12,028), for a total of \$197,087.

A goal of \$650,000 in savings has been established for the department for the 1967-68 fiscal year. Portions of that amount have been made the responsibility of each production supervisor.

"This program is a vital element in the over-all challenge facing us of successfully managing a rapidly growing business," one official said. "It affords each individual who participates an opportunity to contribute his talents in the vital area of cost reduction."

## COMPANY TO CLOSE FOR LONG WEEKEND

All Northrop facilities will be closed Monday, September 4 in observance of Labor Day, a national holiday.

Labor Day will be a paid holiday. In order to be eligible for this pay, however, employees must be at work the last scheduled work day before the holiday and the first scheduled work day following the holiday.

Hourly rated personnel on vacation will receive an extra day's pay for Labor Day. Exempt and nonexempt salaried personnel on vacation will receive an extra day of vacation.

## FOR C-5A

## First Computer Delivered

Northrop Corporation has delivered its first airborne digital computer to Lockheed-Georgia Company for the U.S. Air Force C-5A Galaxy.

Northrop's Nortronics Division in Hawthorne holds two contracts from Lockheed for the C-5A.

The first contract is for production of the aircraft's inertial-Doppler navigation system, which includes a primary and auxiliary computer.

The second is for production of similar computers to be integrated into the Lockheed-designed Malfunction Analysis Detection And Recording (MADAR) system. This system will monitor all major systems aboard the C-5A.

The first computer delivered—a modified navigation system auxiliary computer—will be used by Lockheed in upcoming laboratory tests on its MADAR system.

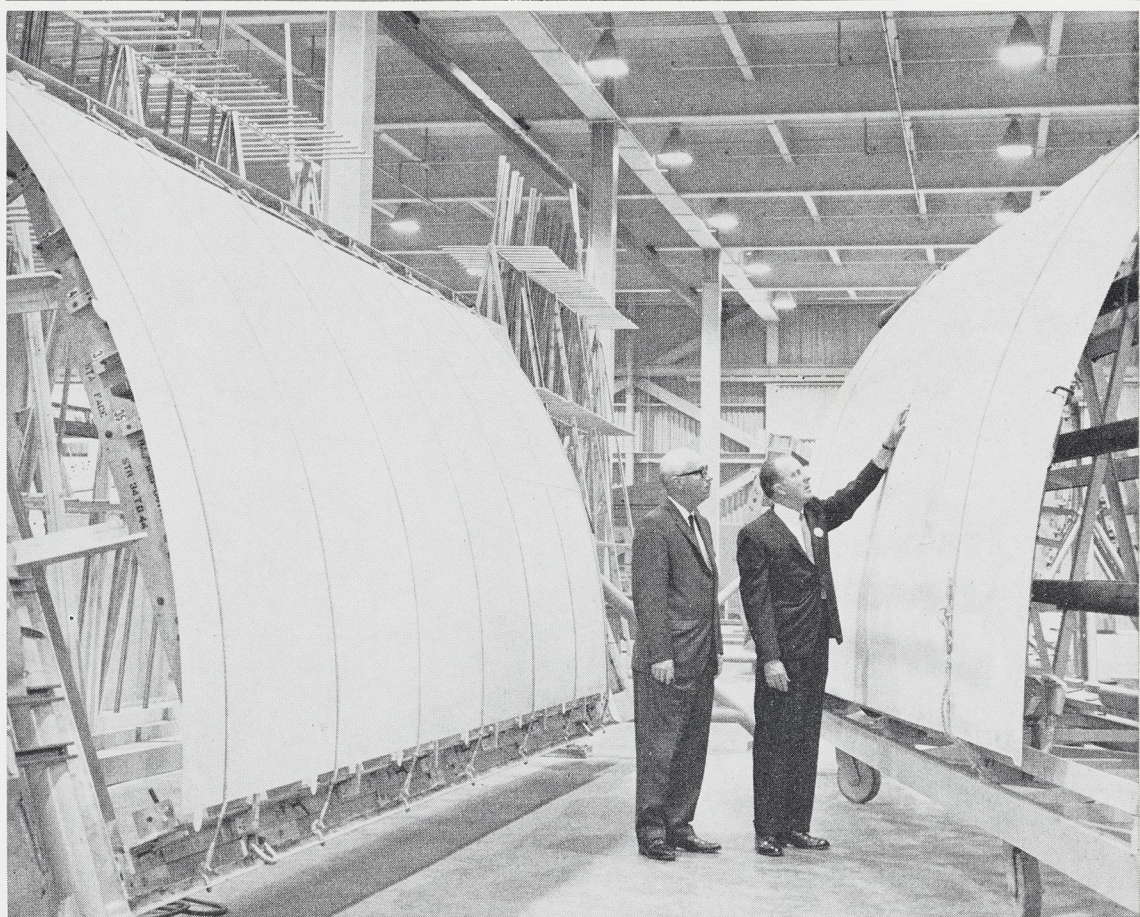
The contractual agreement to deliver the modified computers permits Lockheed to begin lab-

oratory tests on its MADAR system earlier than would otherwise have been possible. When MADAR computer deliveries begin this fall, the modified auxiliary computers will be returned to Northrop Nortronics for integration into subsequent navigation systems now being produced.

Computers for the inertial-Doppler and MADAR systems are basically the same, and only nominal modifications are required to the input/output section to allow their use for MADAR applications.

MADAR computers have an 8,000-plus word memory, with a 28-bit word length. The low weight of the computers is achieved through Northrop's use of film hybrid circuits and microelectronic integrated circuits, plus advanced packaging techniques.

The Galaxy is being developed under direction of Aeronautical Systems Division, Air Force Systems Command, for Military Airlift Command.



**FIRST SKIN PANELS** completed by Norair for the Boeing 747 airliner are inspected by Jack Mannion (right), vice president of Manufacturing and Materiel, and Darrell McNeal, director of the 747 manufacturing program for

Northrop. It will require 74 of these 8 by 20-foot bonded aluminum panels to manufacture each 153-foot-long 747 passenger section. Airlines have ordered 120 of the giant new 747 airplanes from Boeing to date.



## Corporate Lab Employees Begin Daily Bus Service

When employees at the Northrop Applied Research Department in Newbury Park were transferred this month to the Northrop Corporate Laboratories building in Hawthorne, many of them had an important decision to make.

They had to decide whether to keep their homes in Thousand Oaks, Newbury Park and adjacent communities, or move closer to Hawthorne, in order to avoid a lengthy drive.

## Campers Plan Long Weekend At Timberline

NRC Wanderers will hold their next campout over the extended Labor Day weekend, September 1 through 4, at Timberline Meadow Resort, 65 miles north of Los Angeles near Lake Hughes.

The resort features trailer and campsites with water and electrical hook-ups, hot showers, flush toilets, swimming, motor bike trails and fire circles.

Horseback trips, fishing, hay rides and play areas for children are also available. A fishing license is not required for angling on the resort.

Rates are \$2.30 per unit for two people. Children under 12 are an additional 30 cents and children over 12 are 50 cents. Sewer hook-ups are 45 cents.

Reservations are required and may be made by calling Ed Jaeger, extension 2075, or at home, 374-5879.

In other camping club news, the group's next regularly scheduled meeting on Wednesday, September 13 will be held outdoors in Hawthorne Memorial Park.

A potluck dinner at 7 p.m. will precede a short business meeting. The park is at El Segundo Boulevard and Prairie Avenue.

That's when Deane Haddon of Industrial Relations discovered a compromise which made it convenient for these employees to keep their homes and still not face a lengthy drive to work each day.

Mr. Haddon contacted a private bus line, and arranged round-trip daily service between Conejo Valley and Hawthorne.

Each weekday morning at 6:20 a.m., the bus leaves the Conejo Village Shopping Center in Newbury Park. An hour later, it deposits its 25 or so passengers at the Corporate Laboratories building in time for them to begin work at 7:30.

In the afternoon, riders board the bus upon leaving work at 4:15, and are delivered to the shopping center by 5:40 p.m.

The current cost per man fluctuates between \$7 and \$8 weekly, Mr. Haddon said, but this figure would drop if more employees utilized the service.

"Most of our riders live in Thousand Oaks, Camarillo, Newbury Park and Simi," Mr. Haddon said. "It's just a short drive from any of those areas to the shopping center, and, from there, the bus is non-stop."

"It seemed likely to me that there might be other Northrop employees who live in the Conejo Valley area and who might want to join our bus program."

Additional information may be obtained by contacting Mr. Haddon at ext. 4565 or at (805) 495-3498.

## Personnel Activities To Sell Grid Tickets

A limited number of tickets for all USC and UCLA home football games will be on sale at the Norair Personnel Activities office 10 days or two weeks before each game.

Further information may be obtained from Personnel Activities at Hawthorne, ext. 2486.



**JAPANESE EXECUTIVE GROUP** in the U.S. to study executive development programs recently visited the Northrop Corporate headquarters in Beverly Hills. Briefed by John Rushmer (standing, left) and Lee Thornton (standing, far right), the group included (seated

from left) Naoki Shojaku, Shozo Ono, Chikaya Ogata, Hamao Funabashi and (standing from left) Ryo Shirai, Harutoshi Fukuzawa, Masaharu Saruya, Yukihiro Yamanaka and Mitsuo Yamamoto. The visitors represent top management of Japan's largest manufacturing firms.

## Harnett, Corie To Take Part in Panel Discussion

Two Northrop executives will take part in the DOD and NASA Systems Management New Trends short course as guest panelists September 22 at the Airport Marina Hotel.

Joseph Corie, Corporate vice president of Government Procurement Policies, and Daniel Harnett, Corporate director of Contracts, Pricing and Programs, will participate in the program run by the University of California Extension at Los Angeles.

Mr. Corie will speak at a session entitled "Management Reporting Systems" while Mr. Harnett will talk in the "Contemporary Developments in DOD Management Systems" panel.

This course is an interdisciplinary analysis of government and industrial management systems from several viewpoints.

## Grogan to Study at MIT; Flores Earns Promotion

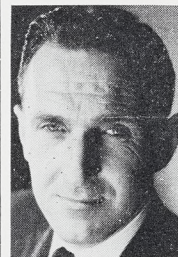
George C. Grogan, jr., Ventura Division vice president and manager of the Engineering department, will participate in the Massachusetts Institute of Technology

agerial decision-making under conditions of constant change and uncertainty."

Replacing Mr. Grogan during his absence will be John R. Flores, recently appointed as deputy manager and chief engineer reporting to Mr. Grogan.

Mr. Flores has been with Northrop since October 1960, when he joined the Norair Division as supervisor of Propulsion. In January 1962, he became chief of Aero and Propulsion Sciences.

Mr. Flores received his B.S. degree in Aeronautical Engineering from Purdue University. He spent seven years with Douglas Aircraft Company, where he was responsible for all aero-thermodynamic work for production aircraft, missiles and advanced design.



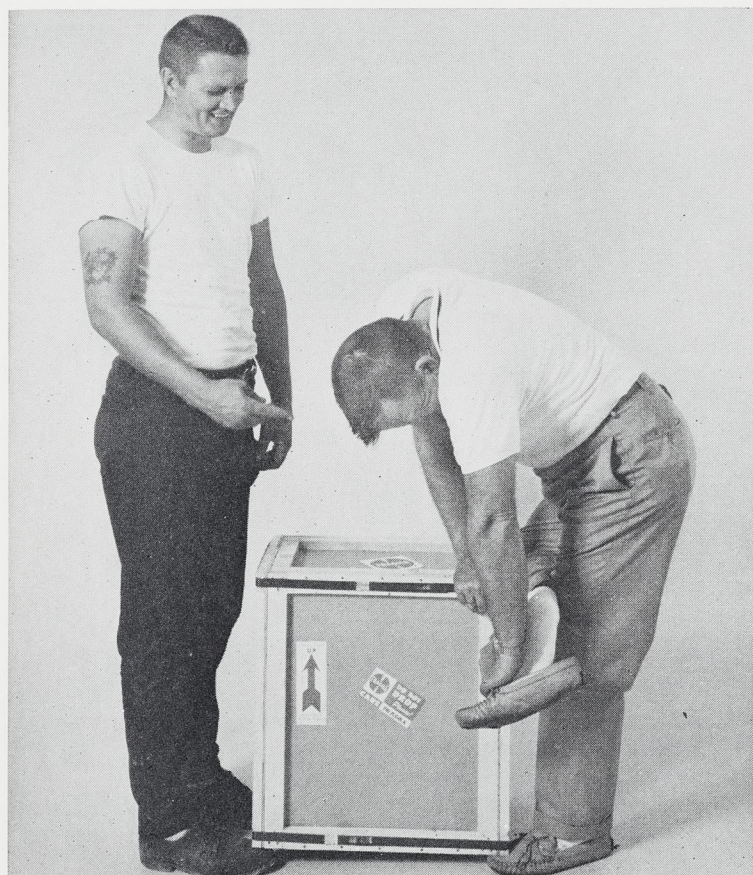
Mr. Grogan



Mr. Flores

Program for Senior Executives this fall.

The nine-week program begins September 18. The course "is concerned with the qualitative and quantitative analysis of man-



**'I BET YOU'RE REALLY CRUSHED'**—Joe Blair (left), Ventura Manufacturing, shows Joe Cooperrider, also of Ventura Manufacturing, that safety shoes may not be quite as quiet, but in the pinch they may save a couple of toes. Safety shoes, glasses and gloves are primary protection in manufacturing areas where throwing your weight around can have painful consequences.

## Safety, Dress Rules Listed For Ventura

Rex Fairless, director of Ventura Industrial Relations, has released a set of guidelines setting acceptable standards of personal appearance, clothing and safety for employees.

"As employees of a business enterprise, our manner of dress and general appearance should be conservative and in keeping with our business environment," Mr. Fairless said.

Female employees are urged to wear shirts or blouses tucked in; to avoid costume rings; earrings and dangling necklaces and to avoid ponytail or high-fashion hair styles, all of which can become entangled in moving machinery.

All personnel working in designated areas must wear protective gloves, but should not wear them around moving machines. Head protection, safety glasses and safety shoes are also musts in areas calling for their use.



**DRAWING A BEAD ON DISASTER**—Barb Lee, Ventura employee, seems pretty hung up on a sewing machine in the Ventura Parolab. Costume rings, earrings, bracelets or dangling necklaces are potentially dangerous around moving machinery. With a little sacrifice of fashion to safety, the more serious sacrifice of several months in the hospital may be avoided.





**HOUSE ON WHEELS**—Johnnie Via, Northrop Ventura Personnel representative, stands in front of converted city bus with his sons, (from left) 9-year-old Johnnie and 12-year-old Todd. The

30-foot bus has all the conveniences of home except for a separate dining room. Mr. Via did all conversion work himself aside from the installation of kitchen and bathroom.

## JOHNNIE VIA'S BUS

### 'Everything but a Lawn'

The most convenient way to take a long trip is to take your house with you. Station wagons, campers and trailers accomplish this to varying degrees, but Johnnie Via's idea tops them all.

Mr. Via, a Personnel representative at Northrop Ventura, has a vehicle that sleeps nine; has a complete kitchen and bathroom; has its own electrical power, and even wall-to-wall carpeting.

Truly a "home on wheels," the vehicle is a city bus bought by Mr. Via from a farm labor camp and converted over a two-year span.

With three girls, two boys and a liking for long trips, Mr. Via felt a need for a self-sustaining unit that could function well both in improved camping grounds and in places miles from an electric outlet or grocery store.

With professional help from Randy Bentz, Mr. Via got all the kitchen and bathroom comforts of home such as a bathtub and an ice box.

Mr. Via teamed with his brother-in-law for engine work on the old bus.

There are obvious problems in driving a 30-foot bus. For sight-

seeing and city parking, the bus is not exactly suitable, and parking meter fees are often astronomical.

Mr. Via has found a good solution to this dilemma. He bought a Jeep station wagon from a junkyard and rebuilt it. The red and white jeep is towed behind the bus on trips and is used for short jaunts when the bus is too bulky for the job.

The Vias are planning a trip through the Midwest next summer with their bus and jeep. About the only things they will leave behind are the television set and the landscaping.

To date, the bus has been used on several short trips. The first of these took the Via family to Morro Bay and back without incident.

The next tour is scheduled for the coming Labor Day weekend, when the Vias will go to Lake Tahoe.

Motorists who concentrate on economy would find the beautifully reconditioned bus a nightmare. Using premium gasoline, the bus does not quite get 10 miles per gallon. And the gas tank holds 40 gallons.

## Tickets Available For September 9 Ventura Picnic

Tickets for the Ventura Division picnic to be held September 9 at Sunset Farms are on sale at the Ventura recreation club office and from all Ventura club commissioners.

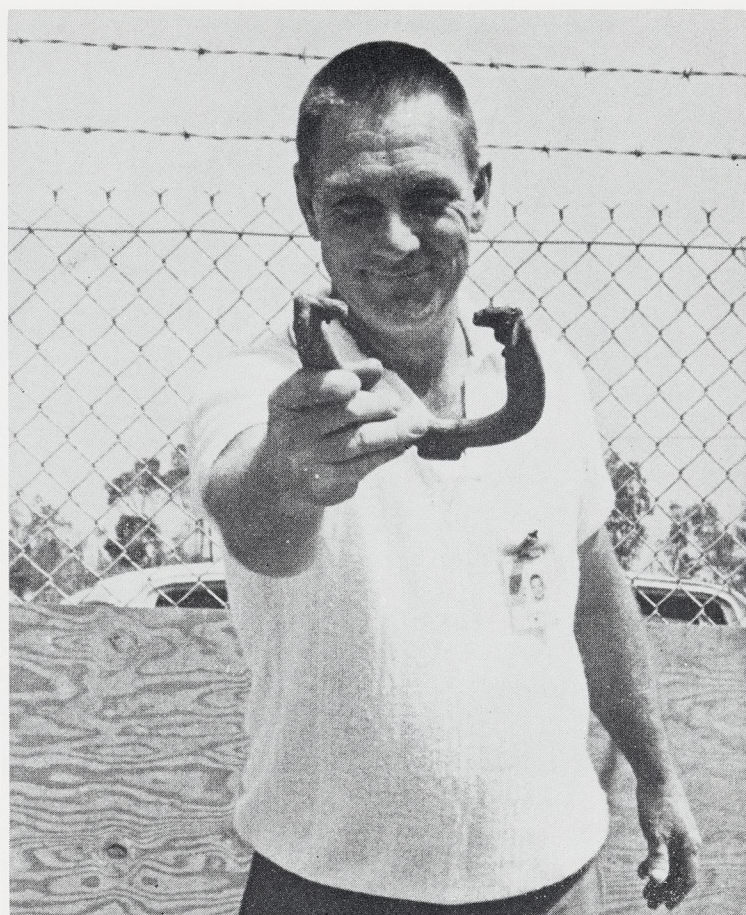
Admission price is 50 cents for employees and family; 25 cents for children six to 16; \$1 for guests and free for children under six.

These prices include a hot dog-hamburger dinner which will be served from 11 a.m. to 3 p.m.

The Bob Baker Marionettes and the Great Kirkham Magic Show will headline activities on The Farms, located adjacent to the intersection of the San Diego and Golden State Freeways at 16303 Foothill Boulevard.

Kids will also enjoy the pony and rocket rides and the chair swing. A stilt walker with a monkey and two clowns with balloons will parade around the grounds all day.

There will be plenty of ice cream available, along with swimming in the Farms' pool and a registered nurse for mishaps.



**THE WINNING PITCHER**—Red Hafertepe, NRC Horseshoe Club commissioner, demonstrates his form after being named winner of a six-week tournament at the Santa Fe facility. In all, 24 took part in singles competition; 30, in doubles play. Winners were presented trophies by the NRC.

## HAFERTEPE WINS

### Horseshoe Tourney Ends

Red Hafertepe apparently is well qualified to be commissioner of the NRC Horseshoe Club, which recently completed a six-week tournament at Norair's Santa Fe Facility.

Because after 23 other participants were eliminated, Mr. Hafertepe was named winner in the NRC-sponsored event, which officials plan to conduct annually.

Matches were held at noon each day from late June until early this month.

Robert Burke finished second,

and Ed Burda was third in the single-elimination tourney.

Thirty employees took part in the doubles tournament, which was conducted at the same time. George Swanner and Mike Legg were first, Mr. Burda and John Holman were second, and Cleo Adams and Francis Todechine were third.

Trophies were presented to the first three finishers in each division. Officials said the success of the event has led them to consider establishing a regular league.

## Son of Norair Employee In Quest of 'Gloves' Title

Ron Kinney, son of long-time Norair employee Matt Kinney, wants to fight in the Golden Gloves Boxing Tournament. He trains every day, running several miles three times a week and concentrating on gym work the rest of the time.

That would not be unusual except that Ron Kinney has a wife and two children, a full-time job and became interested in fighting only two years ago when he was 23 years old.

Though starting late as a boxer, the fight game is not new to Ron. His father is a former professional fighter and was a boxing instructor in the Eighth Air Force during World War II.

The elder Mr. Kinney has been a Northrop employee for 25 years. He is now sheet metal foreman in Advanced Production.

Ron hopes that his rugged workout schedule and his father's instruction will lead him to victory in the Golden Gloves, a national amateur tournament that has developed some of the greats in boxing.

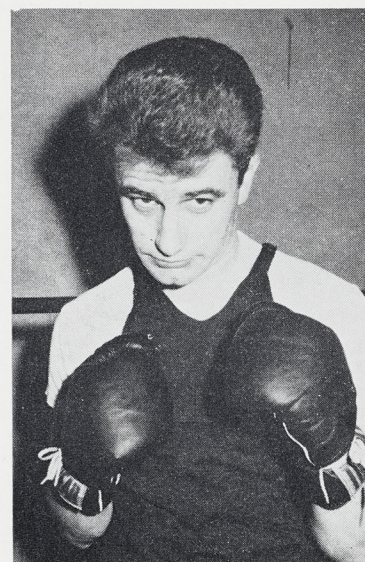
Ron's first fight was in a preliminary bout of this year's Golden Gloves in February. His baptism in the ring was against a man who later reached the finals of the lightweight division.

Though he lost the decision,

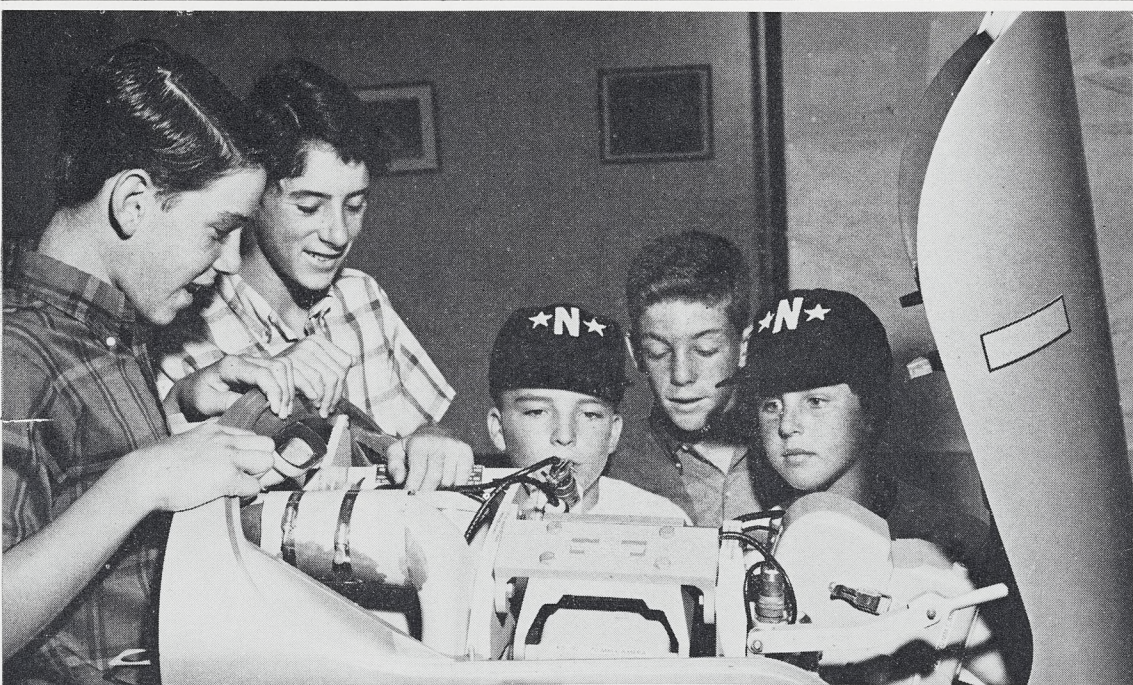
his enthusiasm for the ring didn't cease. He has had to squeeze his training between the demands of his job as a journeyman printer and those of a family man, yet he has worked out faithfully.

Mr. Kinney says with a few more bouts and a rigorous training schedule, his son will have a fighting chance in next year's Golden Gloves.

Every night at Jake Shagrue's Gym the two Kinneys are working to make that chance a success.



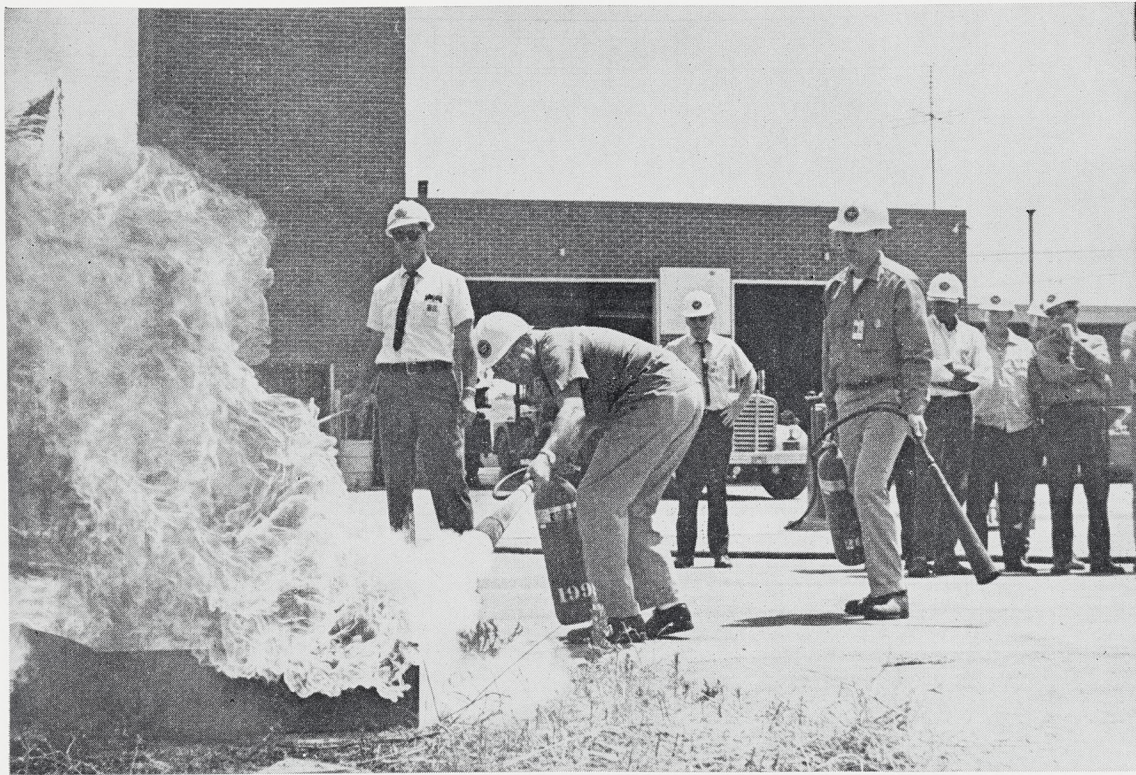
Ron Kinney



**THEY'RE IN THE 'WORLD SERIES'**—Members of the Northridge Little League baseball team examine Northrop's F-5 reconnaissance nose, during an August 17 tour of Norair. On August 19, they won the Little League Western Regional championship, earning a trip to the

Little League World Series. The NRC contributed \$350 to support the Regional tournament. The boys are (from left) Greg Malone, Barry Letzer, Dennis Heerwagen, Ron Borrell and Rick Rosenthal.





**FIRE AND FIRST AID**—Norair Mariposa facility employees extinguish a controlled fire with carbon dioxide spray, as part of their recent training in fire prevention, fire control and first

aid. At left is E. J. Sowle, Norair fire protection specialist. Certificates were awarded to 23 who completed training.

## England's Navy Orders Test Lab From Northrop

Northrop Corporation will design, produce and install an ultra-precision test equipment laboratory for the British Royal Navy's Admiralty Compass Observatory at Slough, England.

The laboratory will be used to evaluate and measure the accuracy of precision inertial instruments such as gyroscopes and accelerometers used in navigation systems. The work will be performed by the Northrop Northronics Division at Precision Products Department (PPD) at Norwood, Massachusetts.

The concept of ultra-precision test equipment was developed jointly by PPD and the U. S. Navy when it became apparent that advanced inertial instruments were reaching a degree of accuracy which surpassed the capability of existing equipment to test them.

Similar laboratories presently are at the U. S. Navy's Applied Sciences Laboratory in Brooklyn, New York, at the NASA Manned Spacecraft Center, Houston, Texas, and the PPD facility in Norwood.

## FOR MARIPOSA

### Volunteer Firemen Named

Twenty-three Norair Mariposa facility employees completed a thorough training course in fire fighting, fire prevention and first aid this month, and were certified as volunteer firemen.

The men — 14 from the first shift and nine from the second — attended six two-hour training sessions at the El Segundo Fire Department. Training ended on August 15.

The new volunteers will serve the entire Mariposa facility.

E. J. Sowle, Norair fire protection specialist, instructed the men in his field. Dr. Richard L. Krebsbach and Dr. James Fitzgerald, both from the Norair Medical unit, taught first aid. Inspector James Pitney of the El Segundo Fire Department was in charge of drills at the station.

The new volunteers from the third shift are C. F. Arenas, L. A. Burns, F. I. Chavez, R. K. Hoy, F. J. Hunter, J. E. Kruger, V. L. McElroy, W. Myerson, P. Pereshula, A. L. Perkins, E. C. Struble, T. F. Sullivan, H. Willey and C. W. Zarsky.

Second shift firemen are C. C.

Bija, B. F. Clark, J. W. Harrison, R. E. Lindsay, J. D. Loranger, M. G. Records, S. Thomas, R. L. Ward and D. W. Yarter.

### Page Helps Build Vietnamese Bridge

Another bridge between the peoples of the United States and Southeast Asia has been built.

This time it was a real bridge, and its construction was assisted by field engineers and technicians of Northrop Page Communications Engineers who are in South Vietnam working on installation of a military communications system.

The project was part of a continuing program, coordinated by U.S. Army Advisory Teams, in which U.S. military and civilian units support local civil action work in their spare time.

The structure, now known as Tu Luong Bridge, spans a small river which snakes through the Vietnamese countryside in the An Khe area. Page contributions included design of the bridge, loan of construction equipment and over-all advisory engineering support.

Completed in six weeks, the bridge was dedicated March 31.

## Wounded Soldier Honored; Returns to Viet Action

It takes more than a shrapnel wound to keep Fred Munch, son of Northrop Hawthorne's Mrs. Gladys Munch, out of action.

Army SP4 Munch, who has been in Vietnam since February, was struck in the left arm on July 27 as he was rescuing a wounded fellow member of the 27th Artillery Battery, near Phuoc Vinh.

Following his injury, he was awarded the Purple Heart—and was back in action within a few days.

"He told us in his last letter that his arm is healing quickly," Mrs. Munch, an electronic assembler on the C-5 Program, said.

The 20-year-old soldier is a



SP4 Munch

graduate of Hawthorne High School.

After attending El Camino College, he joined the Army on August 29, 1966. He completed basic training at Fort Ord, returned home on furlough, and was sent to Vietnam.

At Phuoc Vinh, he has managed the battery's administration and personnel office. In his spare time, he studies Vietnamese and lately has been serving as a translator.

In a letter to the young soldier's parents, Major Randall G. Hastings, former commander of the 27th Artillery, called SP4 Munch "an outstanding young man. I have found Fred to be one of the most capable men in the Battery for communicating with the Vietnamese people. Every one of our indigenous personnel have found Fred to be one of their truly great American friends, a man they can know and trust. He has applied his knowledge of the language in translating letters, bills and important messages."

"Fred has demonstrated leadership, maturity, intelligence, and that rare and valuable quality called common sense in all his endeavors."

Mrs. Munch first joined Northrop in 1958, and rejoined Northrop in May. Her husband is foreman for a painting contractor. The couple also has a married daughter, who has two children, and another son, who is a Navy veteran.

Mr. and Mrs. Munch are planning to spend a week with their son at Christmas time, Mrs. Munch said. The young soldier will be on furlough in Hawaii, and will meet his parents there.

### Engineers Schedule Anaheim Meeting

Members of the Santa Ana chapter of the American Society of Tool and Manufacturing Engineers will meet at 6 p.m. Tuesday at the Golden Pheasant Restaurant in Anaheim.

John T. Milek, of the Standards Engineers Society, will speak, presenting a survey of machine tool standards, numerical control and data processing standards from the standards engineering viewpoint.

Al Sigsson of Northrop Anaheim, one of the officers of the group, said the meeting is open to all Northrop employees.

## 'Walking' Wheeled Vehicle Undergoes Study for Army

A wheeled vehicle that can step over obstacles is being studied by Northrop Corporation for possible use by the Army.

Basic element of Northrop's walking beam suspension system is a pair of wheels, one behind the other, and connected on one side by a short beam. The beam is pivoted to the side of the vehicle so the entire wheel unit can rotate vertically through 360 degrees. Two or more of these tandem wheel units support each side of a vehicle.

Model vehicles using the Northrop system can paddlewheel their way over obstacles equal to their own height. The same technique, say engineers, should allow watertight vehicles to cross deep rivers.

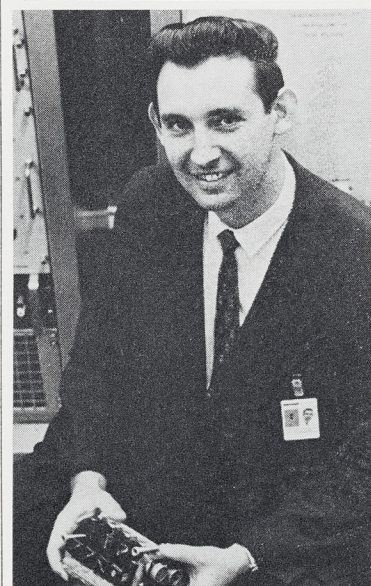
Normally, each wheel unit is locked in a partially rotated position, with only one wheel touch-

ing the ground. This raises the height of the vehicle and permits it to clear obstacles.

With the beam horizontal and both wheels on the ground, the wheel unit can be disengaged and allowed to "float" over undulating terrain. Each of the vehicle's wheel units operates independently of the others.

Conceived by Northrop engineer William B. Sponsler, the walking beam suspension was first applied to a proposed lunar exploration vehicle. Currently, it is being studied by the Army Tank Automotive Command as one of several new suspension systems for high mobility vehicles. In this study, each pair of tandem wheels will be fitted with a belt-like tread or track.

Even without treads, models have demonstrated remarkable tractive ability.



**THE BIG THREE**—These men saved Northrop Ventura a total of nearly \$200,000 last year with their contributions to cost reduction. Glen Estes (left) developed a method of repairing Apollo sequence controllers, and saved \$144,-



000; Bill Lancaster (center) saved \$41,059 by negotiating and purchasing an autoclave; and Mac Robinson saved \$12,028 by introducing a more efficient method of reproducing manufacturing order forms.





Classified

Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private businesses are not accepted. The Northrop News reserves the right to edit or omit ads. Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 62. Ads are limited to one item and one ad per person each issue. Deadline is noon Wednesday, one week before publication.

For Sale

Boat, 15' outboard w/40 h.p. Scott eng., new cover, \$600. Hawthorne, 676-5186. A

House, modern 4-bdrm., family rm., atrium, cash to 5 1/2% V.A. loan, \$31,900. Orange, 714-637-8648. A

Stereo, G.E. AM/FM radio & record player, 3 mos. old, cost \$249; \$175. Garden Grove, 714-892-5177. A

Condominium Apt, Mammoth Mtn. ski area, 2-bdrm., 2 baths, all elec., completely furn., \$24,500. Rolling Hills Ests., 378-0590, 379-4913. A

Home, 3-bdrm., 1 1/4 tiled baths, cpts., antique glass fireplace, new high-rise stove w/dble. ovens, refrig., washer, 10% down, \$24,950. L.A., PL 6-0703. A

Piano, Kaufman upright, medium in color, \$85. Torrance, 835-6710. A

Camera, Honeywell Pentax H-3, single lens reflex, w/f1.8 55mm Takumar lens, soft case, attach. light meter, \$135. Manhattan Bch., 374-6003. A

Ski Boat, 18', Glen-L inboard Cadillac eng., elec. tow lines, other custom features, \$2,500. L.A., AX 2-6242. A

Chevrolet, 1966 Super Sport Impala, p/s, strato b/seats, 18,000 mi., still under warranty, \$2,695. Lomita, 534-0942. A

Station Wagon, 1962 Chevrolet, Bel Aire, 6-pass., power, air cond., new tires, \$795. Littlerock, 944-2678. A

Motorcycle, 1966 Triumph TR6, 650 cc, low miles, \$975. Long Bch., 596-2039. A

Scout 4x4, 1962 model 80, travel top, Warn hubs, Power Lok, r/h, dual gas tanks, rock rack, trans. & rearend o/hailed, good eng., \$1,000. L.A., 473-5973. A

Boat, 16' Dolphin, 75 h.p. Johnson, custom-made trailer, 15" wheels, \$1,200. Box 1701. A

Rug, 10' 2" x 15' brown tweed, 100% wool, 2 yrs. old, \$39. Torrance, 534-0487. A

Lot, Salton City, utilities in, view, 150' elev., \$3,190. L.A., 755-2816. A

Corvette, 1961, mag. whls., fuel injection, 283 eng., 4-spd. trans. w/scatter shield, traction bars, \$1,900. Hawthorne, OS 6-3792. A

Den Furniture, hide-a-bed, end tables & lamps, \$100 or sell separately. Hawthorne, 675-2514. A

House, 3-bdrm., 2 baths, cpts., dps., fireplace, \$30,950. Torrance, DA 3-8531. A

Trailer Hitch, custom-made for 1966 GTO or LeMans Pontiac, \$15. Lawndale, 371-7382. A

T-bird, 1961, new paint, elec. windows & seat, \$900. L.A., 876-7863. A

Motorcycle, Honda, 150 cc, elec. starter, w/shield, new tires, \$250. Torrance, 325-3724. A

Human Hair Fall, dk. brown, 21", worn 2 times, \$50. Lynwood, 632-8696. A

Home, 3-bdrm., 2 baths, family rm., G.E. bltins, d/washer, copper pipes, fireplace, lge. patio, G.I. or no down, \$25,900. Dominguez, 254-7986. A

Chevrolet, 1966 396 SS Chevelle, 4-spd., p/s, low mileage, \$2,400. Long Bch., 423-0843. A

Lawnmower, Scott, pushbutton height control, orig. price, \$50; \$25. Inglewood, 672-4486. A

Surfboard, Bing, 9' 3", \$35. Torrance, 324-5422. A

Pups, Irish setter, AKC, \$100-\$125. Northridge, 349-2215. A

Bookcase, modern, 3-section, 60" long x 48" high, blonde, \$15. L.A., 836-5575. A

Chevrolet, 1953, auto. trans., \$100. Fullerton, 879-7625. A

Window, alum. casement, 4' x 10', 3-section, w/mounting hardware & screens, \$50. San Pedro, 833-5594. A

Ping Pong Table, 3/4" top, fold up on hvy. duty casters, \$20. Hermosa Bch., FR 2-1632. A

House, 3-bdrm., family rm., 2-car gar., w/w cpts., dps., patio, on dble. lot, within walking distance from Northrop, \$37,000. L.A., 294-2014. A

Volkswagen, 1963 sedan, w/sunroof, good tires, \$900. San Marino, 795-2081. A

Sports Fury, 1964 convt., new tires, \$1,400. Gardena, 327-8844. A

Crib, mattress, matching 5-dwr. chest, \$50. Gardena, 327-1977. A

Crib, mattress, \$15, other misc. items. Gardena, 321-1655. A

Renault Dauphine, 1962, near new tires, \$325. Westminster, 714-847-9704. A

Dryer, Lady Kenmore, elec., yellow, 1 yr. old, \$90. Downey, 284-8582. A

Sweater, Scandia, hand-knit cardigan, leather buttons, black, size 38, \$30. L.A., 478-6864. A

T-Bird, 1957, auto., p/s, \$1,150. Redondo Bch., 378-4431. A

For Sale

Valiant, 1961 V200, 4-dr. sedan, \$295. Ox-nard, 805-483-8307. A

Plymouth, 1957 Belv., auto., r/h, \$95. Long Bch., 842-6443, 438-9700. A

Bed Divan, beige, w/ottoman, 2 Danish mod. chairs & rug, 9 x 12, grey, all wool, \$150. Hawthorne, 644-1337. A

Edger-Trimmer, Desert-Ray hi-power 2-stroke eng. w/recoil starter, blade swivels 90°, \$30. Torrance, FR 5-9946. A

Sailboat Equipment, alum. spars, dacron sail w/stainless steel fittings for small boat, \$120. San Pedro, TE 1-9545. A

Wheels, magnesium w/hubs & lug nuts, Shelby GT-500 5-star, orig. cost, \$45 ea. \$120. Bev. Hills, 273-0488. A

Vacuum Cleaner, Electrolux w/attach. & extras, \$15. P.V. Pen., 377-7670. A

Surfboard, 9' 8", used 3 times, orig. cost, \$127; \$50. Redondo Bch., FR 4-2915. A

Camper, 8', 1/2 cabover, \$350. Redondo Bch., 374-3539. A

Wheel Discs, set, for Corvair, \$5. Inglewood, 758-9182. A

Stove, Kenmore, gas, 9 yrs. old, 4 burners, grill, \$20. Torrance, DA 3-0407. A

Mustang, 1967, center console, 289 cu. ft., V-8, p/s, auto. trans., 6,000 miles, negotiate to take over pymts., \$2,700. L.A., 756-7065. A

House, 2-bdrm. & den, 2 baths, fireplace, cpts., dps., forced air heat, covered patio, near schools & fwys., 3 yrs. old, \$4,000 dn., \$22,500. Bell, 587-2520. A

Ford, 1959 Galaxie 2-dr. h/top, 352 eng. completely rebilt w/428 Hi-Perf. cam, Cruise-O-Matic trans., Casler slicks, radio w/vib. & 4 speakers, \$600. Pico Rivera, 699-6181. A

Surfboard, w/racks, 10' 2", lightweight custom Phil., 3/4 redwood stringer, \$60. Costa Mesa, 546-5435. A

Home, 5-bdrm., 3 baths, 2,200 sq. ft., 75 x 105 lot, 2 yrs. old, landscaped, many extras, 10 min. from Nort. Anaheim, \$33,750. Placentia, 714-528-8582. A

Dishwasher, General Electric convt., front load, used 3 mos., orig. cost, \$249; \$125. Yorba Linda, 714-528-9227. A

Yamaha, 1965, YDS-3, 5-spd., 250 cc, take over \$34.44 mo. pymts. or \$400. San Pedro, 831-5500. A

Short Block, for Triumph TR-3, less crankshaft, \$10. Gardena, DA 9-1705. A

Slide Projector, Kodak Carousel 700, remote slide changer, 5" lens, 2 magazines, \$75. P.V. Pen., 377-0080. A

Studio Couch, vinyl removable back, converts into bed, couch covers, \$5. P.V. Pen., 377-7156. A

Home, 3-bdrm., 1 1/4 baths, natl. fireplace, attached 2-car gar., pvt. backyard, sprinklers, walk to Northrop, G.I. or FHA, \$24,950. Inglewood, 754-8897, 756-2248. A

Human Hair Switch, black, approx. 18" long, orig. cost, \$30; \$10. Redondo Bch., 372-0588. A

Honda, 305 Superhawk, 1963, '66 eng., not stock, many extras, \$400. Inglewood, OS 6-8893. A

Sun Tect & sender, \$25. Orange, 714-531-0454. A

Volkswagen, 1961 sedan, '67 1500 cc eng., chrome whls. w/road racing tires, many extras, \$2,000 invested, \$1,250. Garden Grove, 714-539-5711. A

Surfboard, 9' Bing, no dings, \$70. Redondo Bch., FR 6-4341. A

Land, 3-acre parcel from Spanish Land Grant, off Ortega Hwy., 8 miles from San Juan Capistrano, 2,500' elevation, \$3,000 dn., \$13,000. Brea, 714-528-4553. A

Datsun, 1967 roadster 1600, 4-spd. synchro, chrome whls., disc brakes, r/h, tonneau cover, \$2,150. L.A., 645-0266. A

Chevrolet, 1965 Malibu Super Sport, 2-dr. h/top, \$1,950. Inglewood, 671-7162. A

Lincoln, 1957 Premier, 2-dr. h/top, good tires, p/b, p/s, r/h, elec. windows & seat, \$325. Box 1702. A

Volkswagen, 1967, r/h, pushout rear windows, dir. vent, \$1,800. Hawthorne, OS 6-7417. A

Camera, Yashica YJ 35mm rangefinder, case & shoulder strap, f/2.8 lens, quick-throw film advance & bulb setting, \$40. P.V. Pen., 833-7859. A

Chevrolet, 1961 Impala 8, p/s, p/b, radio, good w/w tires, \$750. L.A., 476-4400, 272-2659. A

Cemetery Lot, in Inglewood Park, Pleasant View section, \$450. Torrance, 326-4379. A

Refrigerator, Philco, 14 cu. ft., across-the-top-freezer, \$40. P.V. Pen., 377-3806. A

Pontiac, 1965 Bonneville convt., fact. air, \$1,850. L.A., 756-1431, ext. 215. A

House, walking distance to schools, 4-bdrm., dining rm., paneled liv. rm. w/fireplace, open-beamed rumpus rm. w/used-brick fireplace & wet bar, \$35,500. Torrance, FR 4-3060. A

Guitar & amplifier, elect., \$55. Orange, 714-633-4900. A

Turntable, Bogen, 4-spd., mahogany base, dual cartridge, \$35. Box 1703. A

Oldsmobile, 1963 F-85 Cutlass, r/h, b/seats, floor console, \$985. San Pedro, 832-1886. A

Acreage, 2 1/2 acres, near Willow Springs, on good road, \$17.50 dn., \$17.50 mo., \$1,750. Torrance, FR 8-1026. A

Porsche 1600, 1959, good tires, \$1,500. L.A., 657-6964. A

Twin Beds, 4, mattress, box spring & metal frame, \$25. Manhattan Bch., 379-3487. A

For Sale

Chevrolet, 1962 Impala 2-dr. h/top, factory air, p/s, p/b, 327 motor, \$1,150. Redondo Bch., 370-7268. A

Chevelle, 1966 Malibu, p/s, auto. trans., 15,000 miles, \$2,000. Redondo Bch., 378-8979. A

T-Bird, 1965, full power, air cond., \$2,600. Torrance, 329-6690. A

TV, Admiral, b&w, blonde console, 23", \$50. Wilmington, 835-3869. A

Sofa & Chair Combination, both convert to beds, \$95. Torrance, 370-4458. A

Cabover, Tropicana, 8', \$895. Hawthorne, OS 5-3541. A

CRT Tester, B&K model 400, & color tube adapter, \$40. P.V. Pen., FR 7-4528. A

Chrysler, 1955 Hemi-Head, needs water pump, \$75. Box 1704. A

Honda, 1965 S90 & helmet, \$185. Westwood, 474-9207. A

Volkswagen, 1965, orig. owner, 30,000 actual miles, \$1,450. Los Alamitos, GE 1-1797. A

Sofa, 8 ft. in length, coffee colored, \$35. Torrance, 324-2992. A

Range, O'Keefe & Merritt, gas, \$40. Inglewood, 672-1845, 672-1008. A

Range, gas, Magic Chef, 5 burners, grill, approx. 2 yrs. old, \$125. Torrance, 324-3381. A

Chevrolet, 1957, Bel Aire, recent auto. o/haul, needs paint & rearend work, \$75. Torrance, DA 7-2831. A

Lawnmower, Sears rotary, Briggs & Stratton motor, manuals, \$20. Hawthorne, 679-1631. A

Plateau Table, walnut, 32" x 52", 15" high, 2-way drawer, \$25. Inglewood, OR 4-7743. A

Boat, 14', all elec., trailer, 25 h.p. eng., windshield, new batt., extra prop., \$450. Lawndale, OS 6-1864. A

House, 3-bdrm., 1 1/4 bath, dble. gar., sprinklers, block walls, on alley, 10 blocks south of Nort. Hawthorne, \$23,950. Gardena, 323-9896. A

Range, gas, eye-level oven & broiler, copper-tone w/matching base, rotisserie, orig. cost \$450, 2 yrs. old, \$150. L.A., 757-5595. A

Wedding Gown, size 12, cost \$120; \$60. Westchester, OR 4-8997. A

House, 3-bdrm., 2 baths, large lot fenced, dps., cpts., family rm. w/bar & fireplace, assume GI loan, \$24,900. Torrance, TE 0-3792. A

Honda, 1967, 50 cc, 500 miles, \$175. Tustin, 714-838-3505. A

Crib, matching chest-of-drawers, chestnut finish, \$42.50. Hermosa Bch., 374-5375. A

Utility Trailer, 4' x 6', spare tire, leaf springs, \$50. Harbor City, 325-8932. A

House, 4-bdrm., 1 1/4 bath, rumpus rm., swimming pool, avail. 9-10-67, \$34,900. Westchester, 645-5447. A

Triumph, 1964 TR-4, new tires & rugs, radio, wire whls., \$1,850. Redondo Bch., 378-5091. A

House, 3-bdrm., den, 2 baths, cpts., sprinklers, unattached covered patio, 2-car gar., concrete block wall, \$21,995. Inglewood, 671-8401. A

Income Property, 4 units, 2-3 bdrm., 2 baths & den, 2 2-bdrm., 1 bath, \$53,000. Santa Monica, 399-4468. A

Lots, lake view, 65 x 165, low dn., small monthly pymts., Lake Isabella, \$2,500. Gardena, 635-3127. A

Poodles, 2 female, brown, 8 wks. old, pedigreed, \$35. L.A., 755-5778. A

Go-Cart, child's, chain driven, no motor, \$8. Inglewood, 378-6325. A

Ford, 1957 Fairlane 500, 30,000 on rebilt. 312 V-8 eng., new tires & tune-up, recent brakes, chrome whls., \$300. Redondo Bch., 326-2779. A

Karmann Ghia, 1960, AM/FM radio, \$825. El Segundo, 322-6139. A

Wanted to Buy

Transceiver, FM, 2-meter or 6-meter, amateur or unconverted commercial, also instruments. Whittier, OX 3-4117. B

Washer-dryer Combination & small freezer. Lomita, 326-2590. B

Rifle, Winchester 30-30, model 94, lever action. Torrance, DA 6-4670. B

Fishing Rod, salt water or ocean fishing rod & reel. Gardena, DA 4-7623. B

Cabinet for treadle sewing machine. Torrance, 329-9021. B

Microscope, for student, good quality w/camera attachment. Torrance, 325-1056. B

Battery, for tape recorder or electrical standard tape. L.A., 757-3595. B

Running Gear for sabot. Torrance, 320-7487. B

Volkswagen, pre 1957, does not have to be in running condition. Torrance, 370-8653. B

Antique Records, before 1930 era. Santa Monica, 395-7368. B

Free (To Be Given Away)

Pups, beagle, avail. 9-6-67. Compton, 632-3623. D

Rentals Offered

Apt, 2-bdrm., cpts., dps., disposal, in Wilmington, 10 min. to Norair Torrance facility, \$115. Hawthorne, OS 6-6138. E

Cabin, A-Frame, furn., sleeps 5, 40 miles from Colorado Springs, near 2 lakes & river, \$70 wk. Granada Hills, 894-1937. E

Apt, 2 bdrm., Manhattan Bch., partially furn., stove, refrigerator, utilities paid, lease, \$135 mo. L.A., GR 2-1474. E

Apt, 2-bdrm., cpts., dps., bltins, closed gar., all elec., 5 min. to Nort. P.V., 15 min. to Norair, \$125 unfurn., \$145 furn. Torrance, 375-2091, 375-9397. E

Room, furn. for single lady, incl. kitchen privileges, \$50 mo. Hawthorne, 676-6939. E

Vacation Cabins, Lake Gregory & Crestline, sleep 6, make reservations now to Sept., \$60 wk. Venice, EX 1-2040. E

Apt, 1-bdrm., disposal, gar., \$72 mo. Lawndale, 371-7981. E

House, 2-bdrm., fenced yard, \$110 mo. Box 1705. E

Studio Apt, 2-bdrm., 2 1/2 baths, pvt. deck, sub. gar., lux. features, cpts., dps., elec. heat, d/washer, near San Diego Fwy., adults, lease, \$185. Inglewood, 670-6084. E

Apt, single, 1 person, completely furn., utilities pd., redecorated, pool privileges, 5 miles from Northrop, \$100 mo. Inglewood, 671-9598. E

Girl, to share apt. on beach w/same, \$50 utilities inc. Hermosa Bch., 376-1557. E

Bachelor, wanted to share ranch-style house, col. TV, stereo & all facilities, near ocean in Man. Bch., \$45 mo. Gardena, 329-0433. E

Rentals Wanted

House, 2-bdrm. w/gar., in Hermosa or Manhattan Beach, under \$150. Hermosa Bch., 379-8993. F

House, 2-bdrm., adults only, no pets, Gardena, Lawndale, Hawthorne or South Bay area, references furn., Oct. 1 to Oct. 15. \$100 to \$125 mo. Gardena, 327-8759. F

Personals

We wish to express our sincere appreciation to all our friends at Northrop for their floral tributes & messages of sympathy over the recent loss of my father. HARRY ANDERSON & FAMILY. L

Woman needed to take care of bed patient in cast, from Sept. 11 through Nov. 3, 7:30 a.m. to 4 p.m. Duties: meals, bathe & keep room clean. Salary to be decided. Must be neat & friendly. Rolling Hills Ests., 325-5812. L

Cruise to Mazatlan, Mexico, private yacht, 11 days, during Christmas holidays, food & accommodations, singles only, 14 spaces, cost, \$200. Box 1706. L

Rides and Riders

Rides Wanted

7:15 a.m. — 4 p.m.

Hawthorne & Torrance Bldvs., Torrance. Evenings only. Cindy Seyfried, Nor. Haw., ext. 380, 382, 370-6924.

7:30 a.m. — 4:15 p.m.

Marine & Highland, Manhattan Beach. Louise Berg, Norair, ext. 2763, 545-1662.

Pacific & 39th, San Pedro. Rose Taylor, Norair, ext. 1791, 831-6087.

Arcadia, San Marino, Alhambra, So. Pasadena via Fair Oaks, Arroyo Seco & Harbor Fwy., Arcadia. M. Moore, Norair, ext. 2423, 446-3260.

Hawthorne Blvd. & 118th St., Bertha Sedita, Hawthorne. Mariposa, ext. 4341, 675-1438.

Rides Offered

7:30 a.m. — 4:15 p.m.

Pacific & 39th, San Pedro. Rose Taylor, Norair, ext. 1791, 831-6087.



## NRC Picnic Time in Pomona—A Family Affair



August 20 was the day, and more than 8,000 Northrop employees and their families turned out for the annual NRC picnic, held on the Pomona Fairgrounds. Pavilions such as the one at left provided shade, as well as a place to rest. It was a day for traditional picnic activities, such as the sack race shown at right.



### WITH NORTHROP HOSTS

## Japanese Boy Scouts in Weekend Visit

"It was one of the most wonderful experiences I've had in many years."

That's how Victor Cherbak of Nortronics Palos Verdes described the weekend of August 19 and 20, when he and his family were hosts to a Japanese Boy Scout and a scoutmaster, part of a group of 40 Japanese scouts and officials who spent the weekend in Southern California.

Mr. Cherbak, assistant to Dr. V. W. Howard, Nortronics vice president and manager of the Northrop Systems Laboratories, was one of three Northrop men who served as hosts to the Japanese.

Others were Bob Salisbury, chief of F-5/T-38 Program Con-

trol at Norair, and Paul Kutzly, a Norair cabinet maker.

Twenty families, chosen for their interest in Boy Scout activities, each had two members of the Japanese group as their house guests for the weekend. The visitors were part of a Japanese delegation at a worldwide Boy Scout Jamboree, held in Idaho this summer.

Mr. Cherbak, institutional representative to the Scout troop at York Elementary School in Hawthorne, said the language barrier presented no problems.

"We couldn't understand each other very well," he said, "but we did a lot of communicating with a sort of hand sign language, and got along famously."

Each host took his guests to Disneyland and to the Los Angeles Nisei Festival parade, in which the boys and their leaders marched.

Mr. Salisbury is an advisor to the Knights of Dunamis, an Eagle Scout honor society. His 17-year-old son, Bruce, is an Eagle Scout. He met the group in San Bernardino on Saturday and accompanied the boys to Los Angeles. He also helped coordinate the weekend's activities.

After leaving the South Bay on August 21, the boys had lunch with Los Angeles Mayor Sam Yorty and Japan's counsel general to Los Angeles.

They then headed north for a stay in Yosemite National Park.



**VISITORS FROM JAPAN**—Part of a group of 40 Boy Scouts from Japan lines up in parade formation before boarding a bus which took the boys and their leaders to Yosemite National

Park. Three Northrop families were among the weekend hosts for the boys, who earlier attended an international Boy Scout meeting in Idaho.

## 'Scramble' Parking System Scheduled for Ventura

A new, improved system for reserved and open parking at Northrop Ventura will go into operation on September 5. The new setup is a reserved scramble system providing a section adjacent to each building on a first-come basis.

New stall identification cards corresponding to color-coded bumper decals indicate each of the three scramble areas, Engineering, Manufacturing and Administration.

Eligibility for the reserved areas is limited to supervision at group level or above, salaried personnel at grade 13 or above, executive secretaries and certain resident personnel assigned to the Ventura Division.

Reserved area parking is also provided for visitors and handicapped employees. Executive parking has been moved to the front of the Administration building.

ing with nameplate identification for each stall.

Areas which are not identified by a stall placard are open parking. Open parking decals will be made available by group supervisors by September 5.

A reserved parking request, form 10-167, must be submitted by eligible employees to request reserved parking in accordance with division procedures. They should be sent to Clyde Corder, chief plant engineer.

## Commemorative Medal Issued By Coin Club

The Northrop Coin Club in Hawthorne has issued the first commemorative medal in its history, to celebrate the 20th anniversary of the organization.

The bronze medals are 1 3/8 inches in diameter (slightly larger than a half dollar). They were manufactured for the club by the



Commemorative Medal

Metal Arts Company, of Syracuse, New York, one of the nation's leading engravers of special commemorative medals. The same firm produced a medal issued last year by the Northrop Ventura Coin Club.

Both sides of the new medal were chosen from designs submitted by club members.

A limited number of medals has been set aside for purchase by Northrop employees. Further information may be obtained by contacting the NRC Clubhouse in Hawthorne.

## Ice Follies, 'Millie' Tickets Available

Discount tickets are available to all Northrop employees for two family entertainment events in September—a special showing of "Thoroughly Modern Millie," and the annual visit of the Ice Follies.

"Millie," starring Julie Andrews, will be shown especially for employees and their families at 5 p.m. September 9 at the Warner Hollywood Theater. Ticket prices range from \$1.70 to \$2.55. Order forms may be obtained by calling Norair Ext. 2486.

Reserved seats for the September 17 performance of the Ice Follies will cost \$3—a saving of \$1. The performance will begin at 6 p.m. in the Long Beach arena.

Employees may order tickets by contacting Norair Ext. 2486, Nortronics Hawthorne Ext. 301, Nortronics Anaheim Ext. 244 or Ventura Ext. 513.



# NORTHROP NEWS

NORTHROP NORTRONICS

Published biweekly by Northrop Corporation, Beverly Hills, California

Vol. 25, No. 18

September 13, 1967

## DOD Places \$53 Million T-38 Order

The Department of Defense has announced the award of a contract in excess of \$53 million to Northrop Corporation for continued production of its supersonic trainer, the T-38 Talon.

In announcing the award, the Defense Department said that an initial increment of \$19,431,700 was being awarded on a \$53,-105,908 fixed price contract.

The award is for the 1968-69 fiscal year, with production scheduled to begin in January 1969.

With the new contract, more than 1,000 T-38's, having a production value of nearly \$400 million, have been ordered since 1961, when the twin-jet, high-altitude aircraft entered the U.S. Air Force inventory.

Nine USAF Air Training Command bases are using the T-38, which has logged more than one million hours in the training of student pilots.

The Talon also is used by the Federal Republic of Germany's Air Force for pilot training at Sheppard Air Force Base, Texas, and by the National Aeronautics and Space Administration (NASA), to maintain flight proficiency of astronauts.

T-38's are built by Northrop at its Hawthorne and Palmdale production facilities.

Nortronics provides several items of flight equipment, and Northrop Ventura supplies many fiberglass and plastic parts.

The T-38 compiled an enviable safety record even before it was made available to Air Force student pilots.

In 1959 it became the first supersonic aircraft in Air Force history to complete flight testing without a major accident.

## Service Awards Received by 17

Helen B. Patapoff, senior material analyst at Nortronics Anaheim, became eligible last month for her 25-year service pin. She joined Northrop in August 1942 as an inventory clerk.

Another Anaheim employee, Nicholas Ranill, marked his 20th year with Northrop last month. He came to work for the company in 1947 as a jig and fixture builder, and is now a major proposal estimator.

Fifteen other Nortronics employees are eligible for 15-year service awards. They are Edward Buble, Earl Chambers, Roland Edwards, Walter Hoppe, Roy Jackson, Adolfo Lacayo and William Meiklejohn.

Also, Roy Nichols, R. J. Petrini, Edward Robertson, Dorris Sundquist, Arthur Svec, Mae Marie Taylor, John Allan Valeska and Marvin Weber.



Mr. Bockemohle



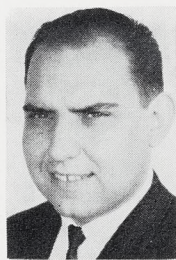
Mr. Brust



Mr. Engle



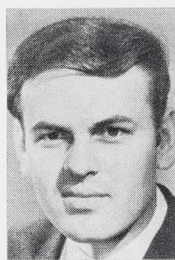
Mr. Field



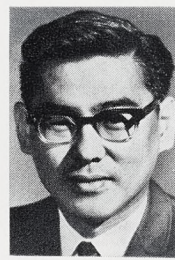
Mr. Jones



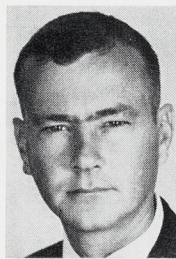
Mr. Kendall



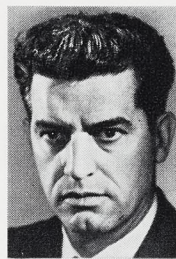
Mr. Krumes



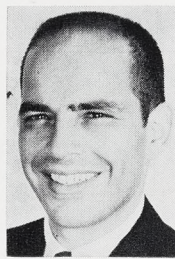
Mr. Maruoka



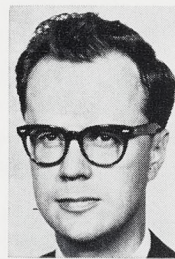
Mr. Singleton



Mr. Smith



Mr. Trujillo



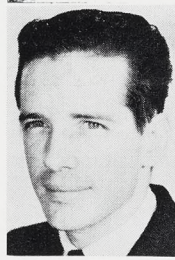
Mr. Basford



Mr. Cobb



Mr. Finkel



Mr. Mahaney



Mr. Moore

**COLLEGE DEGREES**—These 16 men are the recipients of college and university degrees, following their participation in Northrop's Education Refund Plan. Eleven of the Nortronics employees received master's degrees, while five earned bachelor's degrees.

## \$2 MILLION

## PPD Gets Gyro Contract

The Nortronics Precision Products Department has been awarded a \$2,052,972 contract by the Navy for the manufacture and repair of Mark 45 Mod 2 Inertial Reference Integrating Gyros (IRIG). The contract calls for the manufacture of 172 new units and repair of approximately 240 additional IRIG's.

The IRIG is used in the Polaris Missile as the Platform Guidance gyro located near the warhead. Three IRIG's are used to stabilize the platform.

The Precision Products Department in Norwood, Massachusetts, is a developer and manufacturer of precision gyroscopes and accelerometers, packaged sensor assemblies, and inertial sensor test equipment. Its products, used in most of the major U.S. defense and space applications, make up the widest range of inertial sensors available from a single source in the industry.

The IRIG is a single-degree-of-freedom gyro. Three IRIG's mounted on a stable platform maintain a reference for the non-rotating, space-oriented axis in the MK 2 Polaris Fleet Ballistic Missile Guidance System. The IRIG contains a gyro wheel, a floated gimbal in which the wheel is mounted, a microsyn torque generator, and microsyn signal generator, both generators being

mounted on the floated gimbal axis. The spherical gimbal is immersed in a damping fluid of very carefully controlled viscosity and density. A magnetic suspension at each end of the IRIG case provides a float centering force during periods of imperfect flotation. The normalized Mod 2 IRIG is an assembly of the IRIG and all components necessary for the proper functioning and complete electrical and mechanical interchangeability of the IRIG in the Mark 2 Polaris FBM Guidance System.

Polaris, the Navy's fleet ballistic missile submarine weapon system, is perhaps the most spectacular manifestation of the Navy's traditional ability to use its special environment.

Polaris now has been operational for over four years. The submarine Ethan Allen fired a Polaris missile equipped with a nuclear warhead while submerged in the Pacific on May 6, 1962. This is the only time any strategic missile from the United States weapons arsenal has been fired and its nuclear warhead detonated.

The Polaris itself, named for the North Star, is a two-stage ballistic missile powered by solid-fuel rocket motors and guided by a self-contained inertial guidance system independent of external commands or control.

## Sixteen Earn Degrees With Education Plan

Personal effort and sacrifice on the part of individuals coupled with financial assistance through Northrop's liberal Education Refund Plan continues to be utilized by many Northrop Nortronics employees to advance their careers.

Mirroring the effectiveness of this combination are 16 Nortronics employees who earned academic honors at graduation ceremonies held during 1967 for the 1966-67 school year.

Included were 11 who received advanced (master's) degrees and five who achieved bachelor status.

(Northrop News, July 19, reported on the achievements of Dr. George J. Friedman, Nortronics' first employee to earn a doctorate through this program and the 17th graduate of the year.)

Helping individuals attain their education goals has long been a Northrop tradition.

Northrop's Education Refund Plan allows up to 100 per cent reimbursement for course work related to the individual's job. It is regarded as one of the most liberal education benefit programs in any industry.

Of special interest this year is the fact three of the 11 men earning advanced degrees were able to accelerate their study programs through "paid academic absence" provisions of the Plan's Graduate Study Program which allows up to 156 hours per year for this purpose.

"I am sure that I speak for all Nortronics management in extending congratulations to these gentlemen for the many hours of personal time and individual sacrifice required of them in their recent educational accomplishments," said Elmer Noonan, director of Industrial Relations.

"Liberal education assistance programs which Nortronics offers to employees not only result in a sense of individual pride, but also bring to the company greater working expertise."

The 1967 year graduates, in addition to Dr. Friedman, are:

Paul Bockemohle, an engineer in Environmental Engineering, Systems Evaluation, who received an M.S. in mechanical engineering from USC. Mr. Bockemohle joined Nortronics in May 1966 and received his first education refund shortly thereafter.

James Brust, supervisor in Environmental Engineering, received an M.S. in mechanical engineering from USC. Mr. Brust is a Northrop 15-year veteran who has been assisted by refunds throughout his studies leading to his latest degree.

Roger Engle, an associate engineer in the Electrical Design unit, Polaris/Poseidon Project group, received an M.S. in electrical engineering from New Mexico State University. Mr. Engle joined Nortronics in October 1966.

Malcolm Field, an engineering specialist in the Systems Engineering group, Advanced Systems, earned an M.S. in business administration from UCLA. Mr. Field has received refund assistance while working on his master's and is one of those taking part in the Graduate Study Program.

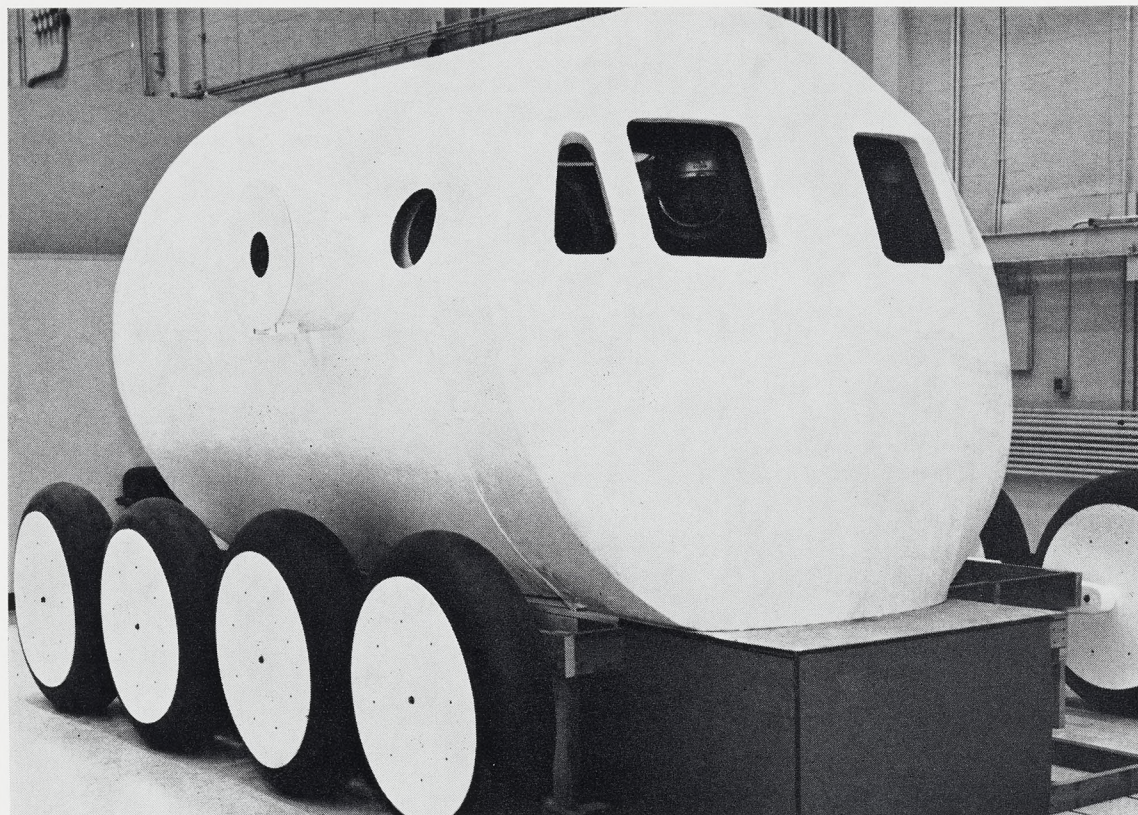
Charles Jones, jr., an engineer in Systems Evaluation, Environmental Engineering, received an M.S. in mechanical engineering from USC. He will soon complete his first year with Northrop and has been assisted in financing his studies over the past two semesters.

(See EDUCATION, page 4)



**THAT'S WHERE IT GOES**—Alberta Perreault (center) and Anna Rapone of Nortronics' Precision Products Department came to California recently on vacation, but not before making special arrangements to see Nortronics Hawthorne where gyros they help to assemble are used in the C-5 navigation system. Van McLaughlin explains how gyros become a part of the floated inertial platform assembly.





UNIQUE SUSPENSION of this odd looking vehicle is to be one of the main topics of conversation when inventor of the system, William Sponsler, appears on "Innovations" television

program. Mr. Sponsler, a Nortronics employee, will discuss the selectively positionable running gear of the vehicle which he conceived during a program initiated and financed by Northrop.

## 'WALKING' VEHICLE TO BE ON TV

Two Northrop employees will appear on "Innovations," a television program carried on KCET, Channel 28, on September 20 and 24 to discuss a self-propelled vehicle developed under Northrop auspices.

William Sponsler, a member of the Nortronics Technical staff, will explain the capabilities of the vehicle which features a "walking beam" suspension system he conceived.

Stan Peterson, Corporate Product Licensing, will examine the

commercial and military possibilities of the vehicle.

It is being studied by the Army Tank Automotive Command as one of several new suspension systems for high mobility vehicles.

Dr. Richard Brennehan will moderate the program which will also include a brief film showing the performance of scale models of the vehicle in rugged terrain.

The September 20 program will be aired from 9 to 9:30 p.m. and the September 24 show will run from 5:30 to 6 p.m.

## Communications Network Links Vietnam, Thailand

Leapfrogging down the coast of South Vietnam and around its southern tip to Thailand is the newest of the world's ocean cable networks.

It was designed and installed by U.S. Underseas Cable Corporation, a Washington, D.C. based affiliate of Northrop.

The network was completed substantially ahead of schedule

### All-Northrop Luau Set for October 7

One of the Southland's most exotic attractions, the fabulous "Tiki's" in Monterey Park, has been reserved just for Northrop guests October 7 when NRC Councils join to stage an all-Northrop Luau.

This giant wonderland of tropic beauty includes more than three acres of "fun" space of an unusual nature, plus eight acres of free parking. It features a banana train ride (from the parking lot), jungle safari walks, erupting volcano, forbidden isle, a sunken snake bar, a barefoot bar, waterfalls, an enormous underground cave and many other attractions.

Three dance bands will play for those who care to dance. A giant show featuring island-like entertainment is a special added attraction.

The capacity is 2,000 persons. NRC Councils plan to sell only this number of tickets at \$6 per person. They include the full evening of entertainment.

under a contract with the U.S. Air Force Systems Command's Electronic Systems Division.

The system provides an essential communications capability by linking six coastal sites in Vietnam and Thailand. It also offers alternative routing capabilities to existing communications systems, most notably the 250,000-mile Integrated Wideband Communications System (IWCS) installed by Northrop Page Communications Engineers, Inc., a company subsidiary.

The new cable also connects with an Air Force cable built by U.S. Underseas Cable in 1965 to link Vietnam with the Philippines.

Over-all, the new system consists of 1,567 nautical miles of underwater cable. It was laid by U.S. Underseas' 12,000-ton cable-ship, the *Neptun*, and a smaller ship owned by the company, the *Omega*.

The *Neptun*, one of the newest and most modern of the world's cable-ship fleet, uses an onboard computer complex to assist in calculations in installing underseas equipment. It is the world's largest in terms of cable capacity.

U.S. Underseas Cable was formed in 1960 by Northrop, Phelps-Dodge Corporation and Felton Guillaume of West Germany.

It has become the main supplier of underwater cable communications systems to the U.S. Department of Defense, in addition to its commercial activities.

## 'TIME SHARING'

## Computer System Provides Versatility

Time sharing isn't new, although technological advances made with the introduction of each new generation of high-speed digital computers further enhance its importance.

In data processing time sharing means the ability to utilize a single computing system to perform many tasks simultaneously.

Obviously, as the number of tasks a system can effectively perform increases, the over-all cost of employing that system decreases, an important factor in a highly competitive business environment.

However, hardware alone is not the complete answer.

The processing of many different jobs concurrently requires development of an equally sophisticated adjunct—computer program software.

The best software not only allows a number of detailed operations to be performed for more than one task, but also maximizes the use of all devices associated with the computer system during the multi-job processing.

Northrop Data Processing experts have perfected an ingenious

Four Norair employees have been assigned key roles in the Society of Automotive Engineers (SAE) National Aeronautics and Space Engineering and Manufacturing meeting to be held October 2 through 6 in Los Angeles.

C. W. Eyres, assistant to the vice president of Engineering, is chairman of the SAE Southern California Section and is a member of the Program Planning Committee for the conference.

He will deliver a welcoming address at the meeting banquet scheduled for October 4.

B. Gaienné, chief of Manufacturing Research and Development, is a member of the Manufacturing Forum's Executive Committee for the conference.

Q. H. Coffman, a senior chemical engineer, will present his paper "Rule 66 Chemical Milling Maskants and Shop Protective Coatings" to an October 2 session dealing with industrial air pollution.

On October 3, R. S. Collins, a senior engineer in Manufacturing Research and Development, will speak on "Gas Tungsten Arc Welding and Resistance Welding 6A1-4V Titanium" at a meeting devoted to titanium joining at lower cost.

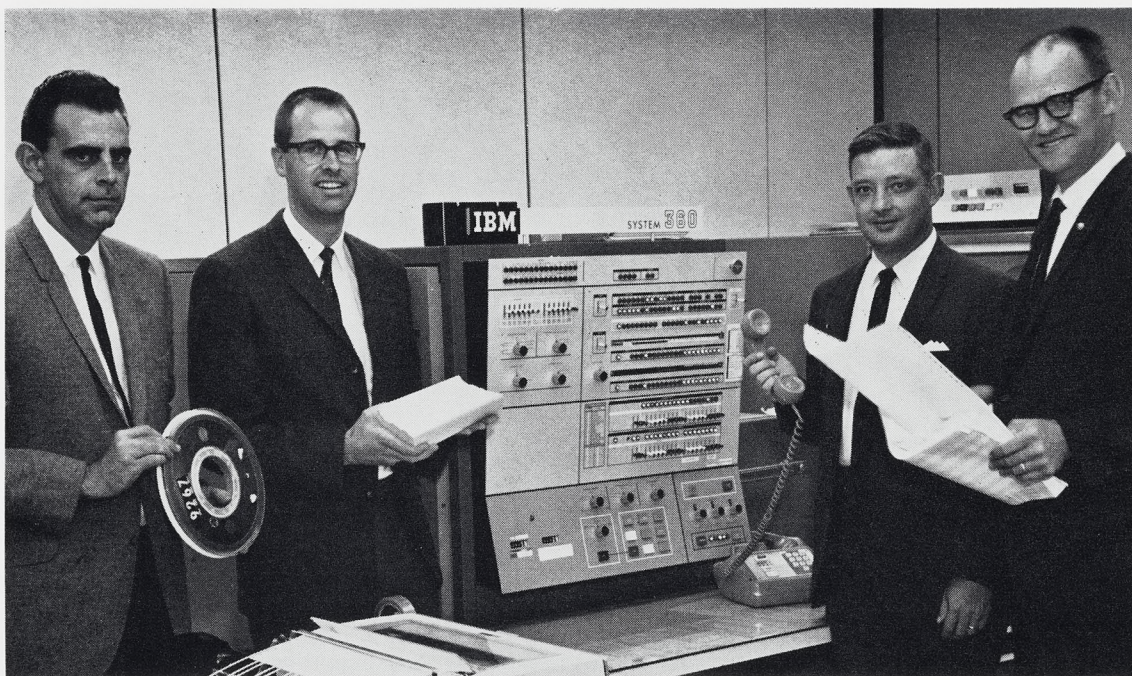
The October meeting of the Southwest Section of the American Vacuum Society will be held on Wednesday, October 18, at the Cockatoo Restaurant, 4334 West Imperial Highway in Inglewood.

The speaker will be Raymond Grande, a research scientist, whose topic will be "Monopole Mass Spectrometers."

## Stamp Club To Meet

Northrop Stamp Club members will hold an important meeting at 7:30 p.m., September 18 at NRC Clubhouse, Hawthorne.

Plans call for a general discussion of new bylaws followed by a vote to accept or reject them.



PRINCIPAL CONTRIBUTORS to a new Northrop computer time sharing system are (from left) Harry Kline, Whit Walter, Bill Guenther and Chuck Erickson, all of Northrop Data

Processing. Behind them is an IBM 360/40 computer console at the Hawthorne Operations Center. The men were instrumental in the development of the new system.



Classified

Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private businesses are not accepted. The Northrop News reserves the right to edit or omit ads. Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 62. Ads are limited to one item and one ad per person each issue. Deadline is noon Wednesday, one week before publication.

**For Sale**

**Draperies**, match-stick w/traverse rods, off-white color, 7 sets, 60" long by 48" wide, \$5 a set. Cucamonga, 714-982-6137. A

**Carpet**, wool, 9' x 12', multi-colored, Early American, \$50. Box 1801. A

**Porto-Shop**, portable, used once, cost \$350; \$200. L.A., 755-2816. A

**Chevrolet**, 1964 2-dr. SS Impala, b/seats, air cond., p/s, p/b, r/h, 327 eng., \$1,450. Norco, 714-735-538. A

**Motorcycle**, 1965 Ducati, 250 cc, \$325. L.A., 756-1431, ext. 215. A

**Rug**, Nylon cut pile, 9' x 12', pastel shade, \$25. P.V. Pen., 377-7670. A

**Ford**, 1965, Cortina GT eng., new tires, \$1,395. Lomita, DA 6-0114. A

**Plymouth**, 1957, 4-dr., auto. trans., \$95. Long Bch., 714-842-6443. A

**Encyclopedia**, 12 vol. set, Wonderland of Knowledge, \$4. Hawthorne, 679-1631. A

**House**, in Hesperia, 2-bdrm., lge. gar. w/guest room & 1¾ bath, R3 lot, fruit trees, fenced, 7 mi. from new lake, \$16,000. Lawndale, 714-244-9042, OS 6-7475. A

**Sloop**, 35' Lion class, fully equipped, 4 yrs. old, all teak w/fiberglass decks, sleeps 6, RDF, ship-to-shore, \$12,500. Torrance, TE 0-3792. A

**Mustang**, 1967, factory air, p/s, disc brakes, auto. trans., \$2,995. L.A., 645-5447. A

**Rocking Wonder Horse**, lge., \$8. Inglewood, 378-6325. A

**Car Cooler**, 6 volts, \$20. San Pedro, TE 3-2512. A

**Guitar**, Kay, carrying case, \$20. Box 1802. A

**TV**, Westinghouse console, b/w, 23", \$25. Hawthorne, 644-1889. A

**Boat Rack & 12' fiberglass boat**, \$150. L.A., 645-1621. A

**Guitar**, elec., Hawaiian, w/amplifier, \$65. P.V., OS 6-1085. A

**Furniture**, antique bench, chairs, picture frames, other accessories, \$200. Torrance, FR 5-8804. A

**Chevrolet**, 1964 Impala, 2-dr. coupe, p/b, p/s, auto. trans., \$1,500. Hawthorne, 679-2456. A

**Tennis Racket**, Spalding, women's light weight, canvas cover & pressboard, \$20. Manhattan Bch., 545-1662. A

**Boat**, yellow jacket, 15' American trailer, 35 h.p. elec. Johnson motor, \$450. Thousand Oaks, 495-9697. A

**Refrigerator**, Admiral, \$25. Hawthorne, 644-4729. A

**Typewriter**, Olympia, portable, \$50. P.V. Pen., 377-5724. A

**Aquarium**, Pemco, 50 gal., reflector & stand. \$60. L.A., OR 2-4828. A

**TV**, 21" Motorola, portable, \$25. Gardena, DA 3-6403. A

**Block**, Chev. 327 from 1965 Corvette, \$45. Hawthorne, 644-6629. A

**Home**, 3-bdrm., 1¾ bath, 1½ blocks to school & park, \$21,900. La Mirada, WH 1-1319. A

**Jewelry**, personal collection, 50¢-\$25 piece. P.V. Pen., FR 8-1863. A

**Organ**, electronic, walnut, bench, \$125. Culver City, VE 9-5438. A

**Ford**, 1961 2-dr. h/top, \$285. Redondo Bch., 370-9313. A

**Beer Bar**, ¼-keg capacity, \$125. Redondo Bch., 376-1305. A

**Grand Prix**, 1964, Landau top, air., p/windows, p/b, p/s, p/seats, vibrasonic radio, \$1,950. Baldwin Pk., 962-6365. A

**Doll Buggy**, English style, \$2. Torrance, FR 9-5690. A

**Tempest**, 1963, V-8, auto. trans., factory air, p/s, r/h, \$900. Torrance, 542-2537. A

**Guitar**, Gibson Firebird, cost \$550, w/case, \$225. Hawthorne, 644-1722. A

**Motor Scooter**, 1967 Vespa, 150cc, 16,010 miles, \$300. Hawthorne, 675-9681. A

**Football Shoes**, Spalding, size 8½, orig. cost \$15; \$8. Rolling Hills Ests., FR 8-5175. A

**Ski Boat**, 14', 40 h.p. Mercury eng. & trailer, \$775. Inglewood, 673-2559. A

**Office Desk**, 30"x60", \$20. Inglewood, 678-0259. A

**Bicycle**, girl's 16", \$9. Torrance, FA 8-3306. A

**Trailer**, 38'x8' eastern-built Stewart Coach, refrig., gas stove, bath w/shower, will furnish, 35'x8' canvas awning, \$700. Hermosa Bch., 374-3638. A

**T-Bird**, 1964, low mileage, power equipment, \$1,950. P.V., 377-9842. A

**Boat**, 15' fiberglass runabout w/43.7 h.p. Scott elec. start eng., trailer, water skis, many extras, \$750. Torrance, 371-3753. A

**Honda**, 305 Super Hawk, 1965, scrambling extras, new knobby, \$325. Temple City, AT 6-7889. A

**For Sale**

**Ford**, 1963, Falcon Ranchero, V-8, 4-spd., \$950. L.A., 645-1523. A

**Golf Club Set**, complete, 4 woods, 10 irons, bag, \$35. Woodland Hills, DI 0-6337. A

**Ford**, 1959 Galaxie 500, 2-dr. h/top, r/h, p/s, \$400. L.A., AX 2-9489. A

**Saxophone**, Semer Bundy E flat alto, 1 yr. old, \$230. P.V. Pen., 377-5853. A

**Triumph**, 1965 650cc, \$100 for my equity & take over \$48 mo. pymts. or \$800. Gardena, 679-3927. A

**Twin Bed**, Long Boy, extra firm mattress, box springs & frame, 372 coil, Sears-O-Pedic, never used, \$85. Lawndale, 676-3050. A

**Plymouth**, 1954 station wagon, rebilt. eng., \$75. L.A., 757-5595. A

**Pickup**, 1930 model A Ford Roadster, completely stock, \$500. Downey, TO 2-4732. A

**Rotisserie**, Roto-Broil, never used, \$20. Torrance, 371-5483. A

**Tire**, 6.95 x 14 Firestone Deluxe Champion b/w, \$10. Santa Monica, EX 9-5413. A

**Transmission**, standard, fits 1955 to '57 Chev., bell housing, fly wheel, clutch pedal w/all parts & Rogers conversion kit, \$60. Norwalk, 860-2097. A

**Transmitter**, HX-10 Heath Marauder SSB, 180 W. PEP, 80-100 meters, never been on the air, \$150. San Pedro, 831-5407. A

**Station Wagon**, 1961 Chev. Nomad, 9-pass., r/h, p/s, auto. trans., \$895. Los Alamitos, 596-4215. A

**Chevrolet**, 1957 Nomad, 6-cyl., \$525. Torrance, FR 1-4173. A

**Home**, 3-bdrm., 1¾ bath, cpts., shutters, att. dble. gar., nat'l. fireplace, pvt. yard, sprinklers, service porch, walk to Northrop, will G.I. or FHA, \$24,950. Inglewood, 754-8897. A

**Lumber**, 63 2"x12" planks, 18 to 20 ft. long ea., \$75. Manhattan Bch., 377-1075. A

**Motorcycle**, Suzuki, 1966, 150 S32-2, \$270. P.V., 378-1561. A

**Cadillac**, 1963 Coupe de Ville, full power, air, 40,000 miles, good tires, new batt., tilt wheel, AM/FM radio, all extras, \$2,495. L.A., 670-4645. A

**Borgward**, 1959 Isabella, r/h, orig. owner, \$150. Torrance, 323-8089. A

**Chair**, recliner, w/vibrator & back massager, maroon Naugahyde, cost \$270; \$150. Gardena, DA 9-1705. A

**Kittens**, Siamese, male & female, 7 wks. old, \$15 ea. P.V. Pen., 377-3806. A

**Oldsmobile**, 1966 Dynamic 88, Holiday cpe., still in warranty, 420 cu. in. V-8 eng., air cond., p/s, p/b, auto. trans., r/h, \$2,795. Rowland Hts., 964-7802. A

**Acreeage**, 2½ acres, near Willow Springs, on good road, \$17.50 dn., \$17.50 mo., \$1,750. Torrance, FR 8-1026. A

**Suits**, 1 brown, 1 grey, 1 blue & grey sports coat, size 42 lge., \$20. ea. or \$50. Torrance, 327-8289. A

**Motorcycle**, 1962 Triumph, 650 cc, \$675. Hawthorne, 679-4063. A

**Boat Trailer**, 14', 17" wheels, \$45. Redondo Bch., FR 8-2609. A

**Dinette Set**, Harvest table & 4 chairs w/pads, hard rock maple, Salem finish, \$65. Manhattan Bch., 374-2381. A

**Slip Lot**, Salton Sea, Riviera Keys near yacht club, water, streets, sewers & elec. inc., \$7,100. Anaheim, 535-1694. A

**Mag Wheels**, 2 14" Hollywood, 2 15" Crager & cheater slicks, 9.00 x 15 Firestone, \$90. Hawthorne, OS 5-7049. A

**Pickup**, 1958 Chevrolet, rebilt. eng. & trans., new brake sys., 6-cyl., stick shift, \$700. Westminster, 714-894-2056. A

**House**, 2-bdrm., Spanish stucco, dining rm. or convt. den, lge. kitchen, service area, h/wood floors, detached dble. gar., 50 x 150 R-3 lot, near Northrop & Imperial Village, \$25,950. P.V., 377-5084. A

**Auto Parts**, TR 650, 1963-'66, new pistons, rings, lge. valves, other items, \$35. Orange, 714-531-0454. A

**Boat**, 15', tach, 24-gal. gas tank, all safety equip., no motor, inc. trailer, \$350. Gardena, 675-9560. A

**Dehumidifier**, used 3 mos., auto. control, \$40. Eastview, 833-3509. A

**Chevrolet**, 1957, Bel Aire, chrome rims, stick, 301 cu. in., many extras, \$750. Hermosa Bch., 379-8993. A

**Sofa**, 9' pillow-back, quilted, casters, green w/gold, Scotchguarded, cost \$500; \$200. Long Bch., 596-9748. A

**Trailer**, located at Mammoth, 33' long, kitchen, furnace, \$700. Torrance, 378-4959. A

**Honda**, 1966 305 Scrambler, 1,400 orig. miles, \$550. Fullerton, 714-871-7287. A

**Rings**, diamond wedding set, 14K white gold, 40 pt. brilliant center, 2 7 pt. marquise, \$295. Santa Monica, 399-2288. A

**Porsche 1600**, 1959, good tires, silver w/black int., \$1,650. L.A., 657-6964. A

**Boat**, 14' o/board w/30 h.p. Mercury motor, trailer, \$350. Inglewood, OR 1-8672. A

**Cemetery Lots**, 2 dble. interment, Inglewood Park, Hillside, value, \$1,300 ea.; \$1,200 or sell separately. Los Alamitos, GE 1-0250. A

**Receiver**, Collins 75S1, conversion to S3, \$275. El Segundo, 322-6313. A

**Mobile Home**, 8' x 45', w/8' alum. awning, \$3,000. Hawthorne, OS 9-2337. A

**Volkswagen**, 1963 sedan w/new sunroof, 34,200 miles, new paint, \$850. Inglewood, 671-0835. A

**House**, 2-story stucco, Windsor Hills, 4 master bdrms., 2¾ baths, tennis court, \$43,500. L.A., AX 3-2161. A

**Wig**, long blonde, human hair, hand tied, \$30. Lakewood, ME 4-3641. A

**For Sale**

**Trailer**, teardrop, full dble. bed, bltin 3-burner stove, ice box, sink, water pump, & 6-gal. water tank, \$225. Gardena, DA 4-2760. A

**Auto Parts**, 4-barrel carburetor & manifold head for T-Bird, Lincoln, Mercury or Ford, \$35. Torrance, DA 9-3286. A

**TR-3**, 1960, \$800. Panorama City, 892-6622. A

**Auto Parts**, for 1955 Cadillac, 4-dr. Fleetwood, radiator, \$15, many other parts, various prices. Hawthorne, 644-4685. A

**T-Bird**, 1957, auto. trans., full power, new porthole top, paint & upholstery, 52,000 orig. miles, \$1,500. Inglewood, 756-1812. A

**Sunbeam Alpine**, 1967, radial tires, \$2,095. Redondo Bch., 376-9875. A

**Idols**, collection of Pre-Columbian, authentic pieces imported from Central America, \$20. Marina del Rey, 823-2655. A

**Bedroom Set**, walnut, used 2 yrs., lge. dble. dresser w/mirror, headboard w/sliding doors, w/out mattress & spring, paid \$250; \$65. Gardena, DA 3-5497. A

**Cadillac**, 1965 convt., full power, air cond., \$3,595. La Habra, 697-5277. A

**Youth Bed**, no mattress, \$10. Inglewood, 675-8173. A

**Chevrolet**, 1966 Impala 2-dr. h/top, auto., p/s, r/h, \$1,950. Torrance, 378-3549. A

**TV**, Admiral, 23", b&w console, \$40. Wilmington, 835-3863. A

**Carpet**, Herculan Nylon, waffle pad, 9x15, avocado green, \$40. Hawthorne, 644-3501. A

**Volkswagen**, 1965, 37,000 miles, \$1,150. Manhattan Bch., 379-3487. A

**Ski Jacket**, men's, medium size, gloves, goggles, ski pants, head band, worn 3 times, \$10. L.A., 478-6864. A

**Magnesium Wheels**, Shelby 15" 5-Star, set of 4 w/lug nuts & medallion caps, \$100. Bev. Hills, 273-0488. A

**Volkswagen**, 1962, 1-owner, radio, w/s/w, \$800. Thousand Oaks, 805-495-9736. A

**Kart**, McCulloch, 1963 model, 4 slicks & mags, Mac 6 eng., 4½ h.p., \$175. West L.A., GR 9-6811. A

**Pontiac**, 1965 GT0, 4-spd., \$1,695. Lakewood, 423-5844. A

**Airplane**, 1960 TriPacer, 160 h.p., 180 smoh eng. & A/C, full panel, 360 Ch. Mx. 12 radio Omni/Loc/G.S. Ind., new paint, \$5,800. Inglewood, 671-1086. A

**Telescope Sight**, Weaver 6X, \$25. Rossmoor, GE 1-7696. A

**Honda 150**, 1965, partially disassembled, \$70. Torrance, 378-5924. A

**Ford**, 1957 Fairlane 500, 30,000 on rebilt 312 V-8 eng., new tires & tune-up, recent brakes, chrome wheels, \$300. Redondo Bch., 326-2779. A

**Corvair**, 1962 Monza 900, auto., r/h, w/w, b/seats, \$535. Gardena, 327-4346. A

**House**, 3-bdrm., den, 2 baths, cpts., sprinklers, unattached covered patio, 2-car gar., concrete block wall, \$21,995. Inglewood, 671-8401. A

**Violin**, case & collapsible music stand, \$65. Santa Ana, 714-549-2763. A

**Air Conditioner**, 1963 Coldspot, 110 V, 11,500 B.T.U. window-type, used 6 mos., \$100. Los Alamitos, 596-1955. A

**Furniture**, tables, \$25, many other items various prices. Inglewood, 671-9598. A

**Ironer**, Mont. Ward, auto., 9 fabric settings, used very little, \$45. Long Bch., GA 3-1363. A

**Chevrolet**, 1962 Impala, p/s, auto., r/h, 327 V-8, orig. owner, low miles, \$900. Long Bch., 596-5488. A

**Freezer**, Philco, 21.3 cu. ft., white, warning alarm, key locking dr., \$200. Long Bch., 423-4837. A

**Ford**, 1963 Country Squire station wagon, V-8, auto., p/s, p/b, r/h, \$900. Anaheim, 714-637-5876. A

**Honda**, 1965 305 Scrambler, '67 eng. & trans., lots of chrome, custom paint & exhaust sys., \$550. Gardena, 676-2986. A

**Austin Healey**, 1959, 4 new tires, trans. & shocks, \$1,000. Manhattan Bch., 545-2612. A

**Wanted to Buy**

**Speaker System**, AR2ax. San Pedro, 833-5594. B

**Camper Shell**, 8', full cargo door w/smaller entry door, prefer factory made. Gardena, 327-8927. B

**French Horn**, dble. key, for young student, reasonably priced. Torrance, 835-6710. B

**Bunk Beds** w/trundle bed. Lomita, 326-2590. B

**Organ**, Hammond only, under \$500. Fullerton, 714-871-1406. B

**Photographic Enlarger**. Buena Pk., 527-4347. B

**Hi-Fi Equipment**, Dynakit PAS-2 preamplifier, Dynakit Mark III amplifier, AR-1W woofer, Janzen electrostatic tweeter. West L.A., 836-5575. B

**Surfboard Rack** to fit V.W., adjustable for 4 surfboards. P.V. Pen., 378-2810. B

**For Trade**

**Chemical Elements**, 100% pure, trade for other 100% pure elements, no alloys or compounds wanted. Lakewood, ME 3-6346. C

**TV**, General Electric, portable, 18" for tape recorder. L.A., 757-3595. C

**Free (To Be Given Away)**

**Dog**, small female German Shepherd to home w/yard & children. Inglewood, 672-8539. D

**Rentals Offered**

**Cabin**, Big Bear Lake, sleeps 7 to 9, \$18 w/end; \$50 wk. Downey, 869-6823. E

**Vacation Cabins**, Lake Gregory & Crestline, sleep 6, make reservations now to Sept., \$60 wk. Venice, EX 1-2040. E

**Rides and Riders**

**Rides Wanted**

**7 a.m. — 3:42 p.m.**

**Bolsa Chica & Edinger**, Huntington Beach. R. G. McNutt, Norair, exts. 4815, 4816, 847-6166.

**Arbor Vitae or Hardy Sts. & Prairie or La Brea Ave.**, Inglewood. David R. Miller, Norair, ext. 2004, 674-2074.

**7:24 a.m. — 4:06 p.m.**

**Vermont Ave. & 223rd**, Torrance. Mellie Strand, Mariposa, exts. 4033, 4030.

**7:30 a.m. — 4:15 p.m.**

**Marine & Highland**, Manhattan Beach. Louise Berg, Norair, ext. 2763, 545-1662.

**8 a.m. — 4:45 p.m.**

**Florence & Otis**, Bell. Jodee Edwards, Norair, ext. 2887, 771-1888.

**El Sereno & Valley Blvd.**, Alhambra. Ruben Viorato, Norair, ext. 1715, 225-0922.

**Valley View St. & San Diego Fwy.**, Garden Grove. Thomas Duteau, Norair, ext. 2230, 897-9815.

**Vanowen & Berquist**, Canoga Park. Will meet or pick up at Fallbrook, Topanga Canyon & Ventura Blvds. Stanley J. Ehlinger, Nort. Hawthorne, ext. 462, DI 8-3289.

**Orange Ave. & Del Amo Blvd.**, Long Beach. W. H. Covert, Norair, ext. 2039, GA 3-1363.

**La Mirada Ave. & Leffingwell or Imperial Hwy.**, E. Whittier. Consider anyone interested, in Whittier, La Habra or La Mirada. Ernest J. Keraly, Norair, exts. 2563, 2595, 944-5946.

**Rides Offered**

**7 a.m. — 3:42 p.m.**

**Hews & Chapman**, Orange. Route: Newport Fwy. to Garden Grove Fwy. to San Diego Fwy. to Norair. Will take 5 riders. Larry Slininger, Norair, exts. 2484, 2485.

**Bolsa Chica & Edinger**, Huntington Beach. R. G. McNutt, Norair, exts. 4815, 4816, 847-6166.

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**Valley View St. & San Diego Fwy.**, Garden Grove. Thomas Duteau, Norair, ext. 2230, 897-9815.

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**Rentals Offered**

**Room**, pvt. bath, gar., single man, \$15 wk. P.V., 830-3704. E

**House**, 2-bdrm., gar., furn., for 30-40 days, all utilities except telephone, \$180. Inglewood, 472-9288. E

**Apt**, deluxe, 3-bdrm., 2 baths, near schools, cpts. & dps., bitins, fireplace, closed gar., pvt. deck, near Northrop, avail. Oct. 1, \$180. Hawthorne, 675-7938. E

**House**, 2-bdrm., garb. disposal, cpts., attached gar., fenced yd., consider 1 child & pets, within walking distance of Norair, \$150. Torrance, 370-4494. E

**Apt**, owner's unfurn. 3-bdrm., 2 bath, pvt. patio, closed gar., family rm., fireplace, all deluxe bitins, inc. d/washer, near Norair, avail. Oct. 1, \$225 mo. inc. utilities. Hawthorne, 679-1358. E

**Apt**, 1-bdrm., bitins, cpts., dps., gar., laundry facilities, adults only, 7 miles to Northrop, \$95 & \$100 mo. Redondo Bch., 379-4628. E

**Rentals Wanted**

**House**, 3-bdrm., 10 mile radius of Norair, 1 adult, 3 children & toy poodle, will pay up to \$135 mo. Box 1803. F

**Child Care Offered**

**Babysitting** for working parents, 18 mos. & up, 5 days a week, excellent references, Hawthorne area. Lynwood, 679-2851. G

**Child**, pre-school, in my home. Hawthorne, 679-4850. G

**Found**

**Pair** of black frame prescription glasses at Northrop picnic. Box 1804. K

**Personals**

**Sincere** thanks to all our friends who made my many years at Northrop such happy ones. Because of you, Northrop has indeed been a good place to work. HARRY KLINE & FAMILY. L

**Our** sincere thanks to all those at Northrop who so thoughtfully & graciously expressed their sympathy in our recent bereavement. It was gratefully received. ANN, CATHERINE & LOUIS D'ANDREA. L

**Flying** to Lake Tahoe, Sept. 23-24, can take up to 4 persons, share expenses. Huntington Bch., 714-847-2648. L

**Our** families wish to express our deep & sincere gratitude to all his fellow workers & many kind friends during this sad & difficult time. We wish to extend our heart felt thanks & appreciation for the many acts of kindness, messages of sympathy & floral offerings. MRS HENRY IMANAKA & FAMILY. L

Golfers Plan Tourney

Northrop Golf Club will stage a two-day tournament October 14-15 at Singing Hills, El Cajon. Entries are now being accepted at Personnel Activities.

Vultee Club Schedules 20th Reunion

Members of the Vultee Club—including several from Northrop Corporation—will hold their 20th annual reunion next month.

Membership is limited to former employees of Vultee Aircraft Development Corporation, a firm which operated in Downey from 1932 until 1942, manufacturing military and commercial aircraft.

The October 7 reunion will be held in the Los Amigos Country Club and Restaurant, 7295 Quill Drive, Downey. A social hour will begin at 5:30 p.m. Dinner will be served at 7:30. Tickets are \$5.

“It wouldn’t surprise me if there are 100 or more former Vultee employees at Northrop,” said Lin Root, a charter member of the club and a 23-year man at Northrop. He’s in Norair Off-Site Engineering.

“Even though we limit membership to former Vultee employees, and the company has been gone for 25 years,” Mr. Root said, “our membership roster gets bigger every year. There are 1,000 names on our mailing list.”

Mr. Root is a former chairman of the group. Another Northrop member is Richard W. Millar, a member of the Northrop board of directors, who was named general manager of Vultee following the death of founder Jerry Vultee in 1938.

Further information may be obtained by calling Mr. Root at ext. 1866 or ext. 1841 at Norair.

Harold T. Schump has assumed duties as chief of Contract Administration Division for Northrop's Air Force Plant Representative, Colonel David E. Galas, USAF.

Mr. Schump replaces James M. Hill who retired July 28.

He comes to Northrop from the Defense Contract Administration Services Region-Dallas where he headed Contract Administration activities.

A native of Kansas and graduate of Kansas State University, Mr. Schump has been associated with the aerospace industry since 1951. Before entering government service, he worked in accounting and contract termination for The Boeing Company in Wichita, Kansas.

His career in governmental service has included duties as an auditor with the Department of Agriculture and as a price analyst with the U.S. Army as well as extensive service with AFPRO functions in the Wichita area that included work as a price analyst, contracting officer and as a government purchase methods analyst. He was chief of Contracts for the AFCMO at Beech Aircraft prior to moving to his DCASR duties in Dallas.

At Northrop Mr. Schump will head a staff of 18 individuals charged with administering all government contracts held by Northrop Norair.



Mr. Schump



# Nortronics Engineers Team up on Mark IV

W. W. Owens of the Nortronics Navigation department and G. J. Barry of the Nortronics Precision Products department have teamed up on the installation and test of PPD's new Mark IV SINS gyro system.

Mr. Owens and Mr. Barry installed the equipment on board the USNS Gen. H. H. Arnold, a range instrumentation ship, in Portland, Oregon.

Following installation of the new gyros, designated the GI-T2-B gyros, it was necessary to operate the Mark IV SINS sys-

Technology's Instrumentation Laboratory.

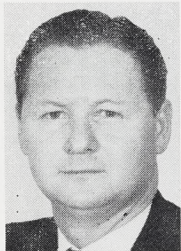
Production design and manufacture of the Mark IV SINS were performed by the Nortronics Navigation department.

Mr. Barry is a test engineer with PPD in Norwood, Massachusetts, where he has performed qualification and final acceptance tests on an impressive number of gyros, including the SP-2, SP-1, GI-T2, 4FBG, 10FG and the GI-T1.

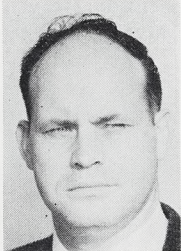
Mr. Owens is a systems engineer with the Nortronics Navigation department in Hawthorne on the Mark IV SINS. He provides technical assistance to the Air Force in support of range instrumentation ships.

The new GI-T2-B gyro they tested was designed to be utilized as a platform grade gyroscope in the Mark IV SINS. It is built around an advanced version of Nortronics' highly successful GI-T1 instrument, which is used in a gyrocompassing application on the Minuteman missile.

The GI-T2-B, in addition to being a high-grade inertial instrument, also had to be completely interchangeable with the 4FBG-3A gyroscope currently used in the Mark IV SINS.



Mr. Owens



Mr. Barry

tem to evaluate the comparative performance of the systems with the new gyros and the older 4FBG-3A gyros.

The Mark IV SINS (Ships Inertial Navigation System) is a precision shipboard navigation system, designed and developed by the Massachusetts Institute of

## AT PPD

## Product Manager Named

Roland Pittman, former manager of Advanced Engineering at National Water Lift Company, Grand Rapids, Michigan, has joined the Precision Products Department of Nortronics as product manager.

The Precision Products Department in Norwood, Massachusetts, is a leading developer and manufacturer of precision gyroscopes and accelerometers, packaged sensor assemblies, and inertial

sensor test equipment.

As product manager, Mr. Pittman will be responsible for the development of the small high-performance sensors, including the new rate sensor, called Dual-Axis Rate Transducer (DART) and the multi-function sensor.

Mr. Pittman has two patent applications pending in the U.S. Patent Office. He already has patents for a fluid rotor sensor, single axis two-gyro stabilized platform; rotative device; and all attitude single axis reference platform.



Mr. Pittman



A HAWAIIAN HULA?—Not really. Youngsters mimic Windy the Clown in a special game. It was part of the fun of a family picnic last month at Swiss Park, Duarte. Sponsored by NRC at Anaheim, the event drew more than 750 for a full day of activities.



SEAPOWER SYMBOL—The U.S. Navy Special Projects Office and Fleet Ballistic Missile program contractors are utilizing this symbol to depict the Polaris/Poseidon program. The

Poseidon weapon system, now under development, will have increased payload, accuracy and flexibility. Nortronics Anaheim is producing the automatic checkout systems for the missile.

## EDUCATION REFUND PLAN

## Sixteen Employees Receive Degrees

(Continued from page 1)

William Kendall is a systems engineer in the Procedures unit of Management Systems who earned an M.B.A. in business administration from California State College at Fullerton. He has been with Northrop since 1961 and received education refunds during his entire study program for his master's.

Rolf Krumes is an engineer in the Munitions Development group, Ordnance Systems, and holder of a Graduate Study Award. He received an M.S. in mechanical engineering from USC. Mr. Krumes has been with Northrop since 1964 and a participant in the refund plan during his advanced studies.

Donald Maruoka is a senior engineer in the Polaris/Poseidon Project, Electrical Design unit and recipient of an M.S. in electrical engineering from USC. Mr. Maruoka has been a participant in the refund program since joining Northrop in 1966.

Another M.S. in electrical engineering degree winner at USC is Gordon Singleton. Mr. Singleton is a senior engineer in the Instrument and Electronics group, Controls Electronics. Mr. Singleton is a 10-year Northrop veteran and a former technician. He has been a Graduate Study Program participant throughout this year and received refunds while working on his master's.

Harold Smith, an engineering specialist in the Ordnance Systems section, Systems Analysis, received an M.S. in systems engineering from West Coast University. A five-year Northrop veteran, Mr. Smith formerly worked at Norair where he was also an education refund participant during master's degree studies.

Theodore Trujillo earned an M.S. in electrical engineering from USC. He has been a refund participant for the past four years. Mr. Trujillo joined Northrop in 1962 and is currently a senior engineer in Control Electronics, Instrument and Electronics Development.

Harry Basford is a recent graduate of Pepperdine College with

a B.S. in business administration and economics. Mr. Basford is a project group controller senior who works in the Financial Planning and Analysis section, Planning and Control group, and joined Northrop in 1966.

Robert Cobb is a 14-year Northrop veteran and recently received a B.S. in electrical engineering from Cal State at Los Angeles. Mr. Cobb is a senior engineer, Support Engineering group, Platform Support Equipment, and a refund participant since early 1966.

The lone representative of Nortronics East Coast on the long graduate list is Albert Finkel, who earned a B.S. in business

administration from Babson Institute. Mr. Finkel is a staff auditor in Internal Audit who is assigned to the Needham Department. He joined Northrop in 1966.

Dennis Mahaney, a project dispatcher in Production Control, received a B.A. in public administration from Cal State College at Long Beach. Mr. Mahaney has been with Northrop for one year and a participant in the refund program for the entire period.

Lawrence Moore, an associate engineer in Automation Systems, earned a B.S. in electrical engineering from USC. Mr. Moore joined Northrop early this year and the refund program shortly thereafter.

## C-5 Program Director Thanks Navigation 'Team'

The Nortronics C-5 IDNE (Inertial-Doppler Navigation Equipment) program met its first delivery to Lockheed two days ahead of schedule by making a partial delivery of the first IDNE System to Lockheed-Georgia.

The delivery date set by the contract was August 28.

According to Bob Sadil, chief, Material and Manufacturing Control, the airborne equipment was shipped from Nortronics Hawthorne on Saturday, August 26, and arrived at Lockheed-Georgia the same day.

In a special memo to all Nortronics Navigation department personnel, Lloyd Balsam, C-5 Program director, congratulated the C-5 IDNE team: "We can properly take pride in the quality of our product . . . I am impressed and very pleased with the demonstrated competence, the combined efforts and the positive thinking attitude of all of you on our C-5 team which has made this accomplishment possible . . . Keep up the good work!"

The shipment includes both airborne equipment and the ground-based equipment necessary to operate it in Lockheed's C-5 Avionics Simulator. It also includes "software" such as com-

puter programs, test procedures, and equipment descriptions, as well as a complete configuration data package, the latter prepared by the Nortronics Configuration Management organization.

Lockheed has established a large laboratory in Georgia with a complete C-5 Galaxy Avionics Simulation setup. The setup includes the pilot and copilot station, the aircraft cabling, the navigator's station, and equipment rack for the IDNE as it will actually exist in the C-5.

In the lab, the IDNE will also be mated with all the other C-5 avionics subsystems. The simulator tests are intended to verify the operation of Nortronics and other Lockheed suppliers' avionics equipment as if they were in an actual C-5 Galaxy.

A special new communications link, a kind of "hot-line," has been established between the Lockheed-Georgia avionics simulation lab and Nortronics Hawthorne. According to Mitch Micheletti, chief, Systems Integration group, the special Datafax system, which makes use of hi-quality phone lines, allows one to insert any document in one end and have it come out, in an exact copy, at the other.



# NORTHROP NEWS

NORTHROP NORTRONICS

Published biweekly by Northrop Corporation, Beverly Hills, California

Vol. 25, No. 19

September 27, 1967



**CONGRESSIONAL VISIT** — Congressman Richard T. Hanna (right) of Orange County examines medical equipment in a Nortronics Anaheim Sealab communications and monitor-

ing center. Congressman Hanna toured the Anaheim facility this month, accompanied by Frank Lynch (left), Nortronics vice president and Anaheim general manager.

## Anaheim's Diversification Brings New Activity Peak

Nortronics Anaheim — where daily schedules are paced to new jobs, new equipment, new buildings and new projects—is moving toward a new peak of activity.

For more than a year this key production facility serving customers with a diversified line of products has witnessed a period of unprecedented change.

Diversification—the capability to develop and produce a wide range of products for an equally diverse clientele—is a basic factor in this change.

It has brought about expansion and growth, in facilities and equipment and in changing personnel requirements.

### Added Space

In this period Nortronics Anaheim has added more than a quarter-million square feet of manufacturing space. It now utilizes some 760,000 square feet, an all-time high in its long history. More than 200 pieces of new major equipment, ranging from complex processing facilities for new aircraft components to simple milling machines, have been installed or requisitioned.

Added facilities and equipment include both government-provided and Northrop-acquired items.

### Skills Needed

Concurrently, Anaheim has hired, and continues to seek, new personnel with many skills to fill a variety of assignments.

Despite the attention to growth and expansion, Anaheim has continued to emphasize its work on current programs.

Developmental and production efforts continue unabated on a wide variety of automated test equipment systems for underseas, surface and shore-based applications, on components, launchers and loaders for the Hawk weapon system, on the production of versatile bomb and rocket dispensers,

on fabrication and assembly of components for the Northrop T-38 and F-5 aircraft, on an extensive array of ordnance systems, plus long-provided service of Fleet Ballistic Missile Program items.

Of major significance at this time is the development of an entirely new capability for the production of aircraft stringers.

Initially, this capability will enable Anaheim to produce stringers for the 153-foot-long central fuselage section Northrop Norair is designing and building for the Boeing 747 airliner.

### Big Project

Approximately 800 stringers will be used in each 747 ship set of components. They may come in as many as 600 different configurations (tapered, joggled, contoured, trimmed). A production rate, in time, of 12,000 pieces per month is planned. This monthly output, laid end-to-end, would stretch 46 miles.

This program represents, more than anything else, a long-range potential that is rare indeed in today's aerospace world.

Because the Anaheim portion of this program ranges from the acquisition to raw materials through delivery of finished items ready for painting, very special

(See ANAHEIM, page 4)

## Travel Club Sets Deadline for Tour

October 3 is the deadline for reserving a seat on the NRC-sponsored group tour to the South Pacific departing November 3.

The tour costs \$1,129 per person and is a 25-day excursion through the fabled islands of the South Pacific, including Australia and many others.

Contact Personnel Activities for details.

## TEN ATTEND SUNNYVALE MEET

Ten key members of two major functions at Nortronics Anaheim returned to their regular duties this week after taking part in a two-week special training course held at Sunnyvale, California.

The Poseidon Missile System Training course was taught by specialists from Lockheed Missiles and Space Company. It began September 11 and concluded September 22.

Taking part were representa-

tives of Nortronics' Automated Test Equipment and Field Engineering organizations. The students were R. A. Collins, Ken Galloway, Clayton Griffin, Dan Haley, Del Harris, Jeff Kemp, Bob Littell, Ray Lowry, Ken Smith and Jim Tway.

While Nortronics personnel have taken part in other missile system training efforts, this was the initial session devoted to review and detailed study of Poseidon systems and subsystems.

## A FAMILY 'OLYMPICS TEAM'

### ...They Golf, Swim, Bowl

Around the Bill Dennis household in Garden Grove there is a feeling it is never too early to seek athletic honors.

Eleven-year-old Tawny Dennis concurs heartily. This young lady, in just two years of swimming competition, has won more than 25 blue (first place) ribbons and a "flock" of second-place honors.

She was second in her age bracket in novice competition in the all-Southern California backstroke event this summer. And she took second in the Orange County "All Comers" event staged by the Elks Club. This honor was in all-events and based on her placing second in the breaststroke, backstroke, freestyle and medley swims.

Kirk Dennis, 10, has also garnered his share of honors in aquatic events, including High Man Honors in the Elks competition. He chalked up more points than others in his age bracket.

Kirk has this problem, however. He finds it difficult to spend too much time in the water when there is baseball and football to play, too. He was a pitcher-first baseman with a champion Garden Grove nine this year. He played in the Brookhurst

Little League. In one contest he pitched to 12 batters and struck out eight of them.

Mr. Dennis is a liaison man in the Nortronics Anaheim F-5/T-38 Electrical Harness assembly function. He was set to attend Stanford University on a football-track scholarship when the Korean conflict intervened. He came home afflicted with polio which has left him without the use of his legs. However, he swims with the youngsters in the family pool and serves as their chief rooter.

His wife, Rose Marie, bowls, swims, golfs and skis. She is also a "coach" for the family.

Mr. and Mrs. Dennis are proud of the youngsters, not only because of their sports accomplishments, but also because they are straight "A" students in school, well-rounded and well diversified in their interests. Both are taking part in a Major Workshop program of California, open only to superior students.

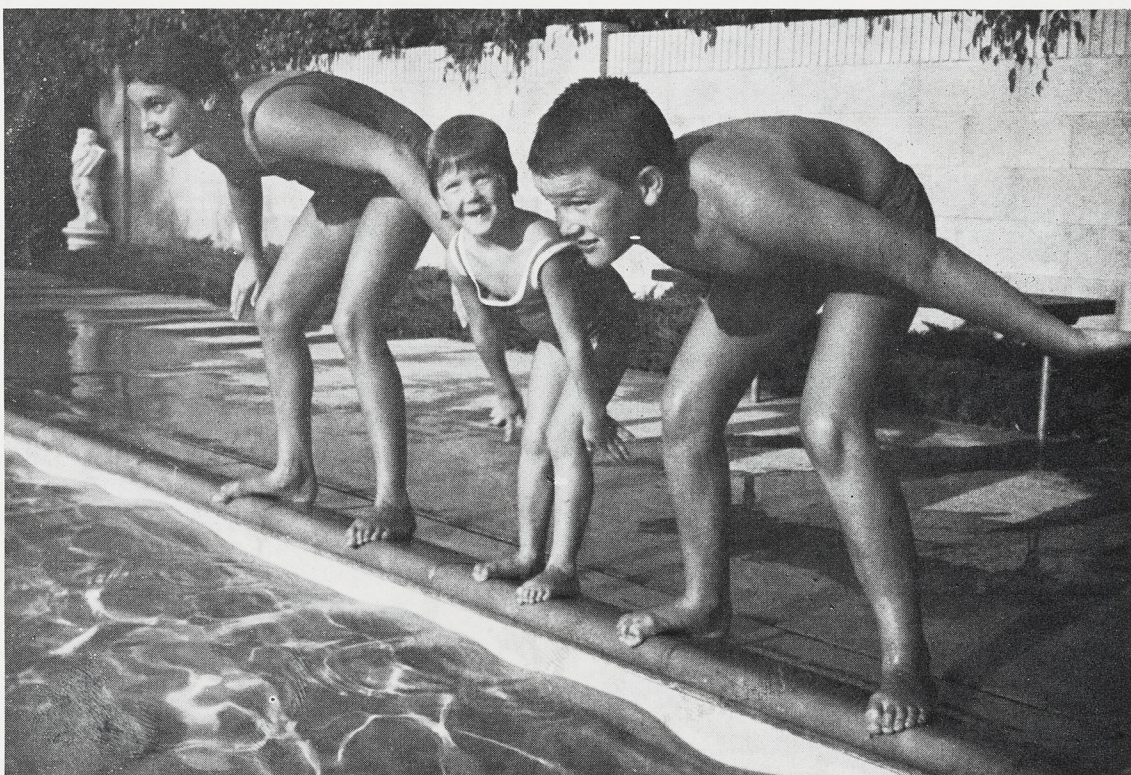
Youngest member of the Dennis family is Dory, a three-year-old, who now swims the length of the 38-foot family pool six times without pause. Next year she, too, wants to compete.

## City Officials Tour New 747 Facilities

Three civic officials from the City of Anaheim visited Nortronics Anaheim early this month for a close look at new production facilities for Boeing 747 airliner stringers.

Alan Orsborn, director of Development Services; Bob Mickelson, assistant director, Development Services; and Homer Wallace, Building Inspector, took part as representatives of the city.

They were escorted by Ray Schultz, director of Manufacturing-Materiel; Grant Gunderson, chief of Production; and Merrill Skilling, chief Plant Engineer, for Nortronics.



**TWO MAKE READY** and one's for the show. Tawny, 11, and Kirk, 10, Dennis show starting form that has helped them win impressive swimming honors. Dory, 3, is quite a swimmer

for her age, but appears more interested in how she looks on camera. Youngsters are children of Bill Dennis of Nortronics Anaheim. Tawny and Kirk are "A" students.



## Hallicrafters Sponsors Emergency Radio Clubs

A driver, his car stalled by engine trouble, sits helpless at the side of the highway.

Soon, another motorist comes to help, calling a garage on the Citizens Band radio in his car.

A doctor realizes in the pre-dawn hours that he urgently needs a rare blood type for an emergency operation. A call goes out on the same Citizens Band, and the blood is delivered to the hospital within the hour.

Who helped the stranded driver? Who brought the life-saving blood to the doctor? It's possible that both were members of the Radio Emergency Associated Citizens Team (REACT), a national emergency service group sponsored by the Hallicrafters Company of Chicago, Northrop's wholly owned subsidiary.

The teams, comprised of three or more members with Citizens Band radios, maintain a 24-hour a day, seven-day a week monitor station listening for emergencies in which they may be able to offer aid.

In most cases, the monitor station is installed at a service station, hospital, police station or other location normally open at all times. An employee at the monitor headquarters agrees to call a team member if something pertinent is received on the air.

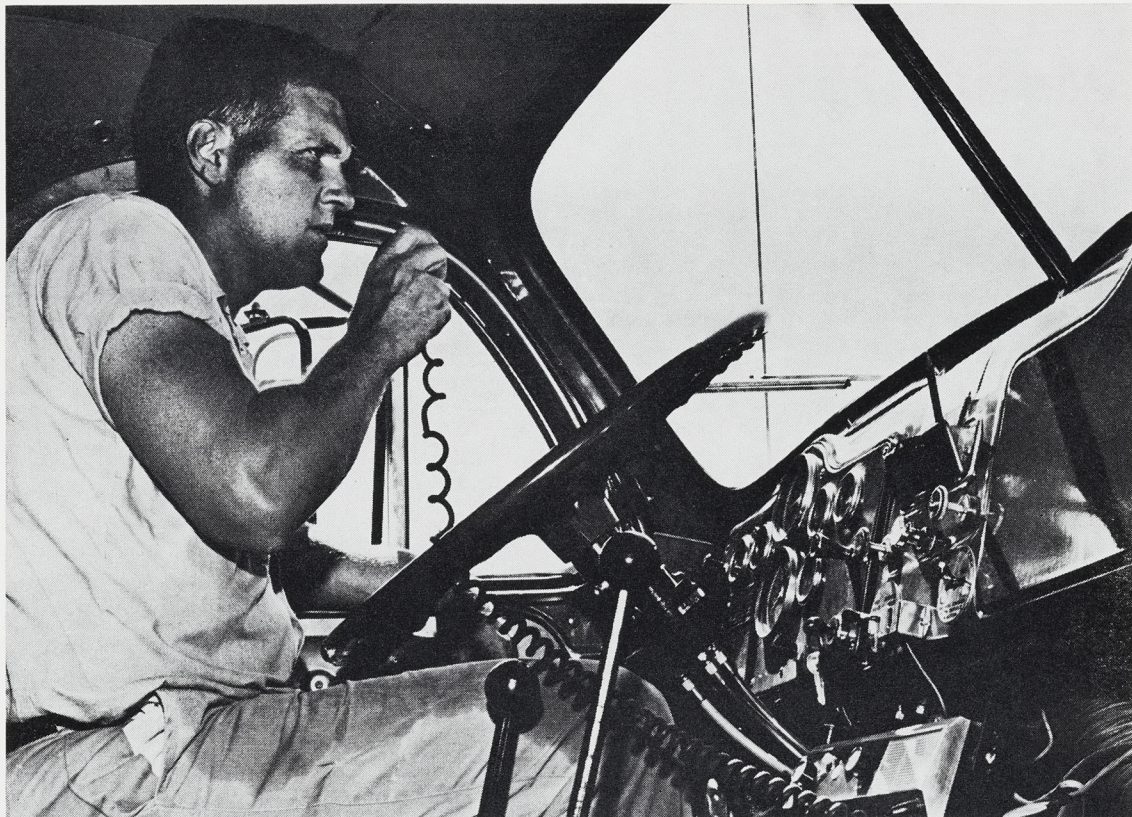
Hallicrafters established REACT as a public service. The company distributes all regular membership materials free to each team. There are no dues, fees or assessments in membership.

REACT has teams in 47 states, seven Canadian provinces and Puerto Rico. In all, figures show approximately 900 teams, with 25,672 total members. In Southern California, there are REACT teams in Anaheim, Burbank, Covina, La Puente, Lennox, Los Angeles, Lynwood, Marina del Rey, San Pedro, Sherman Oaks, Thousand Oaks, Torrance, Ventura and Whittier.

A REACT brochure defines the organization as "a program whose sole purpose is to establish a simple and foolproof system of local emergency procedure for communicating messages, at the right time, with maximum efficiency, on a volunteer basis."

Millions of Americans own two-way Citizens Band transmitter-receivers, installed in homes, offices, cars, boats and airplanes. The effective range for broadcast is generally 15 miles or more. Many owners are businessmen, who install units in their cars so they can be contacted even when away from telephones.

Hallicrafters, which was acquired by Northrop Corporation last year, is engaged primarily in the research, development and manufacture of communications equipment for commercial and military markets.



**'LOOKING FOR TROUBLE'**—A truck driver, keeping alert for highway emergencies, talks on his Hallicrafters Citizens Band two-way radio.

He's a member of REACT, the Hallicrafters-sponsored Radio Emergency Associated Citizens Team. Hallicrafters is a Northrop subsidiary.

## Extinguishers To Be Sold During 'Week'

Fire extinguishers, suitable for use in the home, boats, cars, trailers or workshops, will be available to Northrop personnel at discount rates next month.

The dates, October 9-13, are included in National Fire Prevention Week.

Norair's Fire Department has arranged this service as part of its participation in this event and its continuing off-the-job safety emphasis.

Extinguishers will be displayed at Norair's Personnel Activities office (Plant One) where arrangements may be made for purchases with payment due at the time orders are placed.

Units offered range in size from 2½ to 25-pound capacity and are top-rated equipment, approved by all regulating agencies. They range from all-purpose extinguishers to those for use on special types of fires.

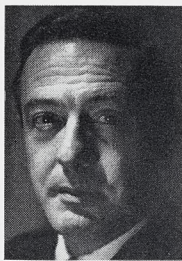
The cost ranges from \$8.10 to \$42.90 per unit and represents a reduction of about one-third off commercial rates for similar equipment. The price includes all taxes, plus delivery to the individual's home. Many units include handy mounting brackets.



**WHERE'S THE FIRE?**—Chief Bill Parker and "firefighter" Susie Bruce show off a few of the many types of fire extinguishers that will be available to Northrop personnel in the Hawthorne complex at discount rates during National Fire Prevention Week. Extinguishers will be displayed at Norair Personnel Activities.

## Ventura's Still To Appear on National TV

Henry Still, Public Relations manager at Northrop Ventura, will be seen by television viewers throughout the country next week as a guest on "To Tell The Truth," a CBS production.



Mr. Still

Mr. Still will be featured on the October 3 presentation of the show, which is seen at 2 p.m. on Channel 2 in Los Angeles. The show is filmed in New York.

He was invited to appear by the network's producers on the strength of his newest book, "The Dirty Animal," a critical appraisal of man and his habit of polluting the air, water and land around him. The book, Mr. Still's third, has received good reviews in newspapers and magazines in many large cities.

The show was taped on September 21 and 22.

Even though the October 3 presentation will be Mr. Still's first on a national network show, he has made several local appearances on radio and television.

On September 19, he was guest on a 30-minute show on KCOP, Channel 13 in Los Angeles. A few days later, he was a guest on the nationally syndicated Joe Pyne Show.

## Glenn Lord Named To NSIA Committee

Glenn R. Lord, Northrop Corporation vice president of Marketing, was installed this month as a member of the Executive Committee of the National Security Industrial Association.

The installation took place on September 14 at the annual meeting of the Los Angeles Chapter of the NSIA. Mr. Lord and the other newly installed officers will serve until October 1968.

The group was founded in 1944 by James Forrestal, then Secretary of Defense, to act as liaison between American industry and the armed forces.

## IN SYSTEMS ANALYSIS

### Horner Foresees Changes

Richard E. Horner, a Northrop Corporation senior vice president, told the Air Force Association in Washington, D.C., this month that systems analysis techniques now used to develop weapons might eventually be applied to solving the problems of entire societies.

Mr. Horner, senior vice president-Technical, presented his observation in the featured speech at the luncheon session which closed the association's annual convention on September 13.

After reviewing the history of systems technology and systems research from the time that the Air Force became a separate branch of the military 20 years ago, Mr. Horner said that this philosophy could have much broader application than simply weapons system development.

He said systems analysis had a "potential application to a wide range of national problems, including in the ultimate the systems approach for the development of whole societies."

"For example, many of the emerging nations, in their efforts to leapfrog centuries of development, possess all of the elements

of a classical problem in systems research.

"Wealthy in natural resources and people, they need definite guidance to assure balanced investment in such areas as education, transportation and communications, so that they are able to take their place competitively in the world community of nations."

## Kessler, O'Halloran Help Plan Meeting

Dave Kessler of Nortronics Anaheim and Dan O'Halloran of Norair are among the key planners of a technical conference to be held tomorrow and Friday in Anaheim.

The event is the fourth Joint Technical Conference, to be held both days in the Disneyland Hotel.

Mr. Kessler, supervisor of Reliability Engineering at Anaheim, is vice chairman in charge of arrangements and finance. Mr. O'Halloran, director of Quality Control at Norair, will speak Friday morning in a conference session in testing.



**CONFERENCE PLANNING**—Dave Kessler of Nortronics Anaheim, vice chairman in charge of arrangements and finance for the fourth Joint Technical Conference, meets with Joni Roberts, an official of the Disneyland Hotel in Anaheim. The conference will be held tomorrow and Friday.



Classified

Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private businesses are not accepted. The Northrop News reserves the right to edit or omit ads. Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 62. Ads are limited to one item and one ad per person each issue. Deadline is noon Wednesday, one week before publication.

**For Sale**

**Headers**, Doug, for 427 Ford, 180°, \$70. Orange, 714-531-0454. A

**Chevrolet**, 1957, tuck & roll uphol., Astro Supremes, \$450. Torrance, 378-5924. A

**Gold Dredge**, 6' underwater-type, 5 h.p. Briggs, complete unit, \$250. Redondo, FR 8-2609. A

**Piano**, portable, elec., Wurlitzer, orig. cost, \$400; \$250. L.A., AX 3-2161. A

**Boat**, 16' Performer, 50 h.p. Evinrude motor, tilt trailer, canopy & access., elec. starter, 2 gas tanks, cover, \$850. Norco, 714-735-5338. A

**Bicycle**, Sting Ray, \$20. P.V. Pen., OS 6-1085. A

**E.T. Mags**, 4 15", polished, for Chev., \$75. Hawthorne, 644-6629. A

**House Trailer**, 38' x 8', eastern-blt. Columbia, refrig., gas oven, full bath w/shower, fully furn., sleeps 6, located at Mammoth, \$1,050. Hermosa Bch., 374-3638. A

**Lawnmower**, Sears, power, reel-type, \$65. Torrance, 370-6734. A

**Hide-A-Bed**, \$75. Lakewood, 423-2835. A

**Ford**, 1966 Galaxie XL, 390 c.i.d., auto. trans., p/s, p/b, \$2,500. Gardena, 644-1833. A

**Beds**, twin, 2, \$15 ea. Canoga Pk., 348-4874. A

**Lamp**, Dazor desk-type, long arm, hvy. base, not clamped, 2 fluorescent tubes, \$10. Los Alamitos, 596-0521. A

**Playpen**, \$6; other misc. baby items. Gardena, 321-1655. A

**Station Wagon**, 1956 Ford, 4 new tires, o/drive, \$75. San Pedro, 547-4229. A

**Bicycle**, 3-spd., boy's 26", lightweight, new equipment, \$20. L.A., 876-6842. A

**Land**, 3-acre parcel from Spanish Land Grant, off Ortega Hwy., 8 miles from San Juan Capistrano, 2,200' elev., \$3,000 dn., \$13,000. Brea, 714-528-4553. A

**Power-Cat**, 14', 2 35 h.p. Mercury, switch-over gas tanks, tachometer, trailer, \$850. Gardena, 675-3254. A

**Furnishings**, bed-divan, ottoman, chairs, 2 Danish, rug 9x12 grey, pad, other items, \$175. Hawthorne, 644-1337. A

**Cabin Cruiser**, 27' Tollycraft, twin Volvo engs. & o/drives, sleeps 4, full galley, other extras, \$5,900. Camarillo, 805-482-6740, 889-0145. A

**Bicycle**, 12-spd., English Derailleur w/extras, cost \$110; \$50. Lomita, 325-4580. A

**Bed**, single roll-a-way w/innerspring mattress, \$12. Hawthorne, 676-7712. A

**Mini-Bike**, 8 h.p., many extras, \$170. Santa Monica, 393-7464. A

**Income Property**, 9 1-bdrm. units on 66x300 lot, 1 mile from Northrop, gross income \$9,000, owner will carry loan to responsible party, \$70,000. Inglewood, 677-4388. A

**Trailer**, fiberglass, fold-down, easy tow, sleeps 2 adults, 2 children, stove, ice box, sink, 18 gal. water tank, p/proof tires, \$495. L.A., 645-2788. A

**Bicycle**, boy's 24" Schwinn, \$10. Manhattan Bch., FR 4-8608. A

**Boat**, 24' 6" Merrill-built aux. sloop, \$1,500. L.A., 279-1007. A

**Dining Room Set**, modern, walnut, 40" x 60" table & 2 12" fills, 4 matching chairs, \$75. Redondo Bch., FR 4-2469. A

**Chevrolet**, 1961 Impala, 4 dr. h/top, 8-cyl., air, p/b, p/s, new batt. & brakes, \$850. Torrance, 329-2926. A

**Sewing Machine**, Singer, portable, model 99K, back & forth stitching w/light bulb, seldom used, \$85. Manhattan Bch., 545-1662. A

**Silverware**, Heirloom sterling Damask Rose, 3 ea. of 6 pc. place settings, \$100. Box 1901. A

**Evening Dress**, size 12, lavender chiffon formal w/matching stole, \$13. Inglewood, 676-1206. A

**Mustang**, 1967 h/top, eng., 289 c.i.d. 2V, auto. trans., wheel covers, radio, \$2,700. Box 1902. A

**Wedding Rings**, paid \$350; \$250. Long Bch., 434-9324. A

**House**, 3-bdrm., cpts., dps., stove, refrig., washer & dryer, patio, fenced yard, \$21,900. Gardena, DA 9-6848. A

**Dishwasher**, General Electric convt., front load, used 3 mos., orig. cost, \$249; \$125. Yorba Linda, 714-528-9227. A

**Piano**, spinet, \$400. Anaheim, 714-776-6463. A

**Camper Jacks**, Ultra-lift cable-type, slightly used, \$45. Torrance, FA 8-1520. A

**Sofa**, French provincial, green brocade, \$75. Anaheim, 714-635-1686. A

**Corvair**, 700, 1962, 4-dr., r/h, auto. trans., \$600. Anaheim, 714-528-4735. A

**Ski Boat**, 12' 6", 40 h.p. Mercury eng., elec. start., Heco trailer, \$450. Buena Pk., 714-828-4439. A

**For Sale**

**Dinette Set**, Danish modern, table w/extra leaf & 4 chairs, \$50. Inglewood, 678-0250. A

**Lawnmower**, Huffy, elec., 1/3 h.p. Delco motor, \$15. P.V. Pen., 377-3806. A

**Volkswagen**, 1964, sunroof, \$900. Thousand Oaks, 498-3585. A

**Saddle**, western, 15" seat, Hereford, near new, covered stirrups, quick change buckles, \$135. Torrance, DA 9-2016. A

**Chevrolet**, 1957 4-dr., V-8, auto. trans., needs eng. & body work, \$50. L.A., OR 0-5990. A

**Home**, 2-bdrm. & den, 1 1/2 bath, fireplace, cpts., dps., 10% down, \$30,000. Inglewood, DA 9-2174. A

**Living Room Furniture**, custom, contemporary, sectional, turquoise blue w/walnut legs, 2 curved sections, other items, \$50 ea. Rolling Hills, FR 7-3487. A

**Mink Stole**, silver blue, no worn spots, orig. price, \$800; \$325. L.A., 674-4622. A

**Kittens**, Siamese, choice of 9 bluepoint, seal-point, male, female, \$15 ea. Lawndale, 371-3919. A

**Mattress**, never used, 15-yr. guarantee, dble. bed size, \$45. Redondo Bch., 324-7318. A

**House**, 3-bdrm., 2 baths, lge. fenced lot, dps., cpts., family room w/bar & fireplace, assume G.I. loan, \$24,900. Torrance, TE 0-3792. A

**Shelby**, 1967 GT 500, 428 cu. in. Le Mans, auto., 4,500 miles, \$2,400 dn., \$2,234 bal. Hawthorne, OS 5-1365. A

**Camper**, 10' Tuck-Away telescopic, butane, refrig., \$750. Torrance, 329-9562. A

**Stereo System**, G.E. tuner, AM/FM mx. adapter, 2 55-watt mono power amps., other extras, \$65. Torrance, DA 4-0847. A

**Yamaha**, 1967, 305 cc, used 2 mos., \$625. Garden Grove, 714-539-9339. A

**Motorcycle**, 1965 Ducati, 250 cc, \$325. L.A., 756-1431, ext. 215. A

**Surfboard**, Greg Noll, 9' 3", \$40. Torrance, 534-1974. A

**Guitar**, elec. Fender Jazzmaster, hardshell case, 2 hi-fidelity pickups & vibrato, \$250. W.L.A., 473-5188. A

**Shoes**, never worn, ladies, 1 pr. size 7B, bone color & 1 pr. size 7 1/2 narrow, red, \$4.25 ea. pr. Inglewood, PL 1-0359. A

**Ski Boots**, Peterhoffers, Austrian made, roller lace eyes, about size 9, men's, \$40. Long Bch., HA 9-6277. A

**Rover**, 1966 2000 TC, r/h, other extras, 26 miles to gal., \$3,295. Hawthorne, 644-4241. A

**Pups**, basset, male & female, \$20 & \$25. Palmdale, 805-947-7448. A

**Home**, 2-bdrm, 2 blocks from Norair, low taxes, attached covered patio, block rear fence, attach. gar., cpts., dps., natural cabinets, many deluxe bltin. features, walking distance to schools, 10% down, \$19,950. Box 1903. A

**Box Spring & Mattress**, single, \$15. P.V., FR 7-4943. A

**Porsche**, 1956 Speedster, 1600 super, \$1,350. Long Bch., 438-8331. A

**Volvo**, 1959, custom body work, mag. whls., record player, \$900. Lynwood, NE 8-5580. A

**Chevrolet**, 1966 Impala, 2-dr. h/top, V-8, 327 eng., p/s, p/b, air cond., \$2,400. Woodland Hills, DI 0-3031. A

**Station Wagon**, Dodge 880, 9-pass., p/s, r/h, air, \$1,800. Rolling Hills, 377-5002. A

**Town House**, 4-bdrm., 2 1/2 baths, cpts., dps., all-elec. kitchen, washer & dryer, concrete patio, 2 1/4-car gar., pool, tennis ct., clubhouse, \$1,500 equity & assume 4 1/4% G.I. loan, \$21,200. Garden Grove, 714-530-4221. A

**Guitar**, elec. & amplifier, 2 yrs. old, \$75. Orange, 714-633-4900. A

**House**, 3-bdrm., 1 1/4 baths, cpts., nat'l. fireplace, att. dble. gar., walk to Northrop, sprinklers, G.I. or FHA, \$24,950. L.A., 754-8897. A

**Table Saw**, Sears, 9" tilt arbor, w/ext., on metal stand, \$100. Torrance, 370-6734. A

**Shop Manual**, Porsche, for model 356A inc. supplement, \$10. Inglewood, 674-8504. A

**Poodles**, females, 8 wks. old, brown, A.K.C. reg., \$35. L.A., 755-5778. A

**Chair**, Danish modern, recliner, brown, \$30. P.V. Pen., 377-6648. A

**Boat**, 16' outboard, 35 h.p. Johnson, elec. bait tank & starter, inc. trailer & all equipment, \$550. Lakewood, 423-5844. A

**Engine**, aluminum V-8 for 1962 Buick, complete, \$225. Hermosa Bch., 374-4792. A

**Stove**, elec., 5 yrs. old, \$75. Torrance, 323-9586. A

**Ford**, 1957 Fairlane 500, 30,000 on rebilt. 312 V-8 eng., new tires & tune-up, recent brakes, chrome whls., \$300. Redondo Bch., 326-2779. A

**Camera**, Honeywell Pentax H-3, w/f1.8 55mm auto. lens & hand leather case, cost \$230; \$125. Manhattan Bch., 379-3487. A

**Drafting Machine**, 8 mos. old, \$85. Hawthorne, 679-2041. A

**Stove**, O'Keefe & Merritt, chrome top w/ griddle, hi-broiler, \$75. Torrance, 329-0504. A

**Acreage**, 2 1/2 acres, near Willow Springs, on good road, \$17.50 dn. & \$17.50 mo., \$1,750. Torrance, FR 8-1026. A

**Volkswagen**, 1967, 1500 deluxe sedan, radio, backup lights, 3,000 miles, still under warranty, \$1,795. Hawthorne, 676-0024. A

**Triumph**, 1959 Bonni, 65 T.T. barrels & head, H&C cams, much chrome, less than 500 mi., \$1,000. Canoga Pk., 348-0125. A

**Drums**, complete set, St. George, blue sparkle, \$165. L.A., HO 5-3476, HO 3-5337. A

**Rifle**, Savage 30-30 cal., bolt action, sling, pad, \$45. Hawthorne, 676-4251. A

NORTHROP NEWS

**For Sale**

**Bedroom Set**, maple, 2 night stands, h/ board, dble. bed size, dresser w/mirror, Nev-A-Mar finish, \$100. Redondo Bch., 374-1195. A

**Camera**, Primo Jr., 127 twin lens reflex, f/2.8 lens, neck chain, lens hood, \$15. Wilmington, 835-3869. A

**Chevrolet**, 1965 Impala S.S., 396 cu. in., auto., r/h, p/s, w/w tires, w/beauty rims, \$2,295. L.A., 566-7378. A

**Radio Transmitter**, GO-9, much other surplus equipment, \$25. Gardena, 679-4434. A

**Guitar**, Nylon string, capo, orig. cost, \$65; \$25. Torrance, 323-4540. A

**Volkswagen**, 1200 sedan, 1965, 37,000 miles, \$1,150. Manhattan Bch., 379-3487. A

**Crib**, white, new mattress, \$15. Fullerton, 714-879-7625. A

**Coin Collection**, U.S. pennies, nickels & dimes, incomplete, sell all or part, \$75. Torrance, FR 5-4312. A

**Range**, Gaffers & Sattler, cost \$360; \$45. Gardena, DA 4-7623. A

**Bicycle**, 10-spd., needs a little work, \$20. Costa Mesa, 714-546-9850. A

**Honda**, 160, 1966, helmet, goggles, \$400. Reseda, 343-7087. A

**Pup**, beagle, female, 18 mos. old, AKC papers avail., has all immunizations, inc. dog house, \$50. Miraleste, TE 3-0822. A

**Karmann Ghia**, 1963 convertible, \$1,195. Thousand Oaks, 805-495-8731. A

**Trailer**, located at Mammoth, kitchen, 1/2 bath, 2-bdrm., \$700. Manhattan Bch., 545-6114. A

**Sorrel Filly**, 3 yrs. old, quarter & thoroughbred, professionally trained, \$650. Torrance, 532-7095. A

**Colt .45**, auto. w/holster & 50 rounds of ammunition, \$65. Fullerton, 714-526-2071. A

**Bunk Beds**, complete set, maple, 3 mos. old, \$50. Lawndale, OS 6-6481. A

**Oldsmobile**, 1965 Cutlass, p/s, p/b, b/seats, 335 cu. in. eng., \$1,995. Harbor City, 534-1394. A

**Refrigerator**, General Electric, 13 cu. ft., white, new door seal, \$20. Long Bch., 423-4837. A

**Power Mower**, reel-type, \$25. Torrance, FR 9-5690. A

**Pontiac**, 1966 GTO convt., p/s, auto. trans., w/w tires, 4-track stereo tape unit w/6 speakers, 15 tapes, \$2,300. Playa del Rey, 322-6212. A

**Typewriter**, Olympia, portable, \$50. P.V. Pen., 377-5724. A

**Wheelchair**, Everest & Jennings, jr. size, folding, recently cleaned & lubricated, \$75. Santa Monica, 393-9195. A

**Range**, O'Keefe & Merritt, \$40. Hawthorne, 644-1504. A

**Guitar**, Silvertone elec., carrying case & strap, vibrato tailpiece, tone & volume control, \$40. Hermosa, 379-6404. A

**Motorcycle Helmet**, white, safety approved, complete w/wind screen, \$6.50. Rolling Hills Ests., 375-7038. A

**Pickup**, 1967 Chev. V-8 El Camino, \$2,200. Inglewood, 674-4563. A

**Volkswagen**, 1962, 20,000 miles on new eng., \$800. Los Alamitos, 430-7388. A

**Home**, modern, 4-bdrm. & family room, lge. yard, enc. covered patio, cpts., dps., 5 1/2% V.A. loan, \$31,900. Orange, 714-637-8648. A

**Slot Cars**, 8 w/carrying box & many accessories, \$80. Norco, 714-737-7678. A

**Thunderbird**, 1962, fully equipped, factory air, will accept Anglia panel truck for equity, \$1,350. Buena Pk., 714-527-4347. A

**Glass Boat**, 15', conv. top, full cover, Merc. MK35A elec., big whl. Amer. trailer, \$750. Anaheim, 714-774-2779. A

**Cadillac**, 1962 4-dr. p/b, p/s, air cond., 38,000 miles, \$1,500. Santa Ana, 714-544-2748. A

**Piano**, Wurlitzer spinet & bench, cherrywood, \$425. Hermosa Bch., FR 2-1632. A

**Bunk Beds**, solid maple, heavy frame, \$50. Hawthorne, 675-8278. A

**Motorcycle**, 1964 Yamaha, 250cc, \$375. Inglewood, OR 0-4650. A

**TV**, 21" G.E., portable, slim line, b&w, modern, walnut & brass stand, \$75. Van Nuys, ST 9-5791. A

**Piano**, upright, \$125. Gardena, DA 9-3048. A

**Home**, 3-bdrm., 1 1/4 baths, walking distance to Norair & Nort. Hawthorne, \$23,950. Gardena, 323-9896. A

**Washer**, Kenmore, auto., w/all external water hoses for hookup, \$25. Gardena, 324-0930. A

**Cabin Cruiser**, 24' Essaness, Chrysler V-8 inboard, 180 h.p., S.S. radio, 2-bunks, h/top, ice box, \$2,500. Torrance, DA 4-6260, DA 4-4838. A

**Mobile Saw**, blt. on Model T Ford frame & rearend, 4-cyl. Star eng. & trans., table mounted on rollers, \$25. Manhattan Bch., 377-1075. A

**Trailer**, 28' Boles Aero Zenith, furn., full bath, bedroom, air cond., radium heat w/ thermostat control, G.E. refrig., \$1,795. Canoga Pk., 348-4874. A

**Leathercraft Tools**, beveling & decorating, \$35. Box 1904. A

**Amplifier**, Gibson Hawk, 15" speaker, reverb. & tremelo, cost \$250; \$160. P.V. Pen., 377-8817. A

**Drums**, complete set, Ludwig, prof. size, red sparkle finish, \$300. Torrance, 328-7476. A

**House**, 2-bdrm., in Hawthorne, 60' x 150' lot, \$22,500. Redondo Bch., 370-0459. A

**Rambler**, 1959, auto. trans., good tires, \$100. Hawthorne, 679-7008. A

**For Sale**

**Impala**, 1965 Super Sport, 2-dr. h/top, 4-spd., console, 327 eng., w/w tires, \$1,900. Hawthorne, 644-6629. A

**Tempest**, 1963, V-8, auto. trans., factory air, p/s, r/h, \$900. Torrance, 542-2537. A

**Cabin Cruiser**, 26', galley, refrig., bait tank, sleeps 6, \$1,000. Torrance, 378-0500. A

**Acreage**, 2 1/2 acres, Lancaster, residential zoned, \$1,500 dn., \$50 mo., \$5,500. Redondo Bch., 375-7130. A

**Volkswagen**, 1966 sedan, sunroof, AM/FM radio, extra speakers in doors, wood steering whl., under seal, camber compensator, s/ belts, \$1,550. Lawndale, OS 6-5425. A

**Lincoln**, 1957 Premier, 2-dr. h/top, good tires, p/s, p/b, r/h., electric windows & seat, \$325. Hawthorne, OS 9-6247. A

**Violin**, 1/2 size, \$35. Manhattan Bch., 372-6603. A

**House**, 3-bdrm., 1 1/4 baths, lge. kitchen, 1,600 ft. of living area, 2-car gar. & workshop, \$29,950. Inglewood, 675-6431. A

**Filing Cabinet**, steel, letter-size, 4-dwr., \$30. Manhattan Bch., 374-8744. A

**Stud Service**, toy Dachshund, red, 5 1/2 lbs., AKC registered, \$35. Los Alamitos, 430-9863. A

**Baby Accessories**, floorlamp, matching wicker clothes hamper & wastebasket, \$10, other items various prices. San Pedro, 833-8238. A

**Toilets**, 2 marine-type, for vacation trailers or boats, \$50 ea. Gardena, 323-4329, 373-1932. A

**Reducing Couch**, 2 yrs. old, orig. cost \$325; \$75. Inglewood, 677-3074. A

**Pontiac**, 1964 Catalina, 2-dr. h/top, Ventura trim, 421 cu. in., 3-spd., tri-power, new tires, \$1,700. Torrance, 834-8434. A

**Receiver**, Collins 7551, conversion to S3, \$275. El Segundo, 322-6316. A

**Wanted to Buy**

**Boat Trailer**, capable of carrying 17' SK-type inboard boat. Manhattan Bch., FR 4-3702. B

**Pontiac**, 1965 Catalina, power s/b, & factory air cond. Hawthorne, OS 6-9593. B

**Vacuum Cleaner**, Kirby, used. Fullerton, 714-871-1406. B

**Motorcycle**, wrecked or used, lightweight, interested mainly in frame & front suspension, must be low priced. Granada Hills, 363-3843. B

**Japanese Sword**, Katana, ancient sword as a collector's item. L.A., 733-5903. B

**Parts** for 1940 Ford or old '40 Ford. Gardena, DA 9-4200. B

**Camper**, factory-built, sleeper, at least 36" above bed, full back to fit 6'6" fleetside GMC, slide in box-type. Hawthorne, OS 6-5219. B

**For Trade**

**Chemical Elements**, 100% pure, trade for other 100% pure elements, no alloys or compounds wanted. Lakewood, ME 3-6346. C

**Twin Beds**, white plastic headboards trade for bunk beds. Compton, 631-3656. C

**Blue Chip** stamp books trade for S&H Green stamp books, up to 20 books wanted. Hollywood Riviera, FR 8-3529. C

**Free (To Be Given Away)**

**Pup**, 8 mos. old, mixed breed, mainly terrier. Hawthorne, 644-4177. D

**Dove**, white, red eyes. Inglewood, 672-5798. D

**Rentals Offered**

**Apt**, 1-bdrm., unfurn., closed gar., close to park & transportation, \$95. Torrance, FR 5-0867, DA 8-9199. E

**Vacation Cottages**, Idyllwild, 1 & 2 bdrms., fireplace, stream, pates, \$20.35 w/ends; \$45.70 wk. L.A., PL 4-5288. E

**Apt**, 2-bdrm., cpts., dps., bltins, garb. disp., all elec., closed gar., soundproofed, 5 min. to Nortronics P.V., avail. in Oct., \$125 unfurn.; \$146 furn. Torrance, 375-2091, 375-9397. E

**Apt**, 1-bdrm., furn., Manhattan Bch., \$175 mo. Redondo Bch., 376-9392. E

**Studio Apt**, 2-bdrm., 2 1/2 baths, pvt. deck, sub. gar., lux. features, cpts., dps., elec. heat, d/washer, near San Diego Fwy., adults, lease, \$185. Inglewood, 670-6084. E

**Vacation Cabins**, Lake Gregory & Crestline, sleep 6, make reservations now, \$25 w/ends; \$60 wk. Venice, EX 1-2040. E

**Oceanshore Apt**, all-elec. kitchen, 1,700 sq. ft. plus patio, cpts., dps., 2-car sub. parking, tennis cts. & heated pools, 2-yr. lease, no children, avail. after Nov. 1, \$370 mo. P.V. Pen., 377-8945. E

**Share Home**, Norair employee, w/another woman, pvt. sleeping room, home privileges, 10 minutes from Norair, \$75 mo. Lawndale, 679-3994. E

**Apt**, duplex, 1-bdrm. furn., yard, 2 blocks to Northrop Hawthorne, incl. water & trash, \$80 mo. Lawndale, 676-3050. E

**Apt**, single, furn., util. paid, 3 blocks from Norair, \$80 mo. Hawthorne, 679-2955. E

**Apt**, delux, 3-bdrm., 2 baths, cpts. & dps., bltins, fireplace, closed gar., pvt. deck, near Northrop & schools, avail. Oct. 1, \$180. Hawthorne, 675-7938. E

**Apt**, 1-bdrm., bltins, cpts., dps., gar., laundry facil., adults only, 7 miles to Northrop, \$95 & \$100 mo. Redondo Bch., 379-4628. E

**Room**, outside entrance, no drinkers, \$10 wk. Box 1905. E

**Owner's Apt**, unfurn., 3-bdrm., 2 baths, pvt. patio, closed gar., family rm., fireplace, all deluxe bltins inc. dishwasher, near Norair, avail Oct. 1, inc. utilities, \$225 mo. Hawthorne, 679-1358. E

**Rides and Riders**

**Rides Wanted**

**5 a.m. — 3:42 p.m.**

**Pico & Fairfax**, Los Angeles. Sam Roth, Norair, ext. 2087.

**7 a.m. — 3:42 p.m.**

**Hewes & Chapman**, Orange. Route: Hewes to Kattela to Hwy. 39 to Garden Grove Fwy. to San Diego Fwy. to Norair. Will take 5 riders. Larry Slininger, Norair, exts. 2484, 2485.

**Beach Blvd. & Warner or Edinger**, Huntington Beach. Route: San Diego Fwy. A. L. Nolder, Norair, ext. 2377, 2661, 714-847-6286.

**7 a.m. — 4 p.m.**

**Cerise & 139th**, Hawthorne. Evenings only. Linda Chamberlain, Nort. Haw., ext. 867, 679-2319.

**7:30 a.m. — 4:15 p.m.**

**Westminster & Huntington Beach**, Westminster. Consider 7 a.m. start if rider willing to wait in afternoons. William T. Wright, Norair, ext. 1291, 1271, 714-897-8277.

**Freeman & 120th**, Hawthorne. Kathy Bowker, Norair, ext. 2901, 675-3978.

**8 a.m. — 4:45 p.m.**

**Rosecrans & Condon or Hawthorne Blvd.**, Lawndale. Sandi De Longchamp, Norair, ext. 2436, 676-8345.

**Rides Offered**

**7 a.m. — 3:42 p.m.**

**Beach Blvd. & Warner or Edinger**, Huntington Beach. Route: San Diego Fwy. A. L. Nolder, Norair, ext. 2377, 2661, 714-847-6286.

**7:30 a.m. — 4:15 p.m.**

**Westminster & Huntington Beach**, Westminster. Consider 7 a.m. start if rider willing to wait in afternoons. William T. Wright, Norair, ext. 1291, 1271, 714-897-8277.

**Rentals Offered**

**Apt**, deluxe, 2-bdrm., downstr., unfurn., cpts., dps., bltins, lge. pool, closed gar., near El Camino, adults, \$125. Torrance, 324-8373. E

**Rentals Wanted**

**Desire** to rent apt, 3-bdrm. or home in Torrance, South Bay Area, no pets, 2 children. Costa Mesa, 714-548-8108. F

**House**, 2-bdrm. w/gar., Hawthorne area preferred, must rent by late Oct., \$100 to \$145. Lawndale, 371-8304. F

**Home**, 3-bdrm. or larger, w/lge. yard in Greater South Bay area, have 7 children, will maintain property, references avail., needed immediately, rent or lease, \$100 to \$130 mo. Lawndale, 673-1972. F

**House**, 2-bdrm. or apt., unfurn., by Oct. 15, prefer south of Northrop Norair, employed adults, can furnish references, up to \$130. Gardena, 327-8759. F

**Child Care Offered**

**Babysitting**, experienced high school girl, weekends. Hawthorne, 675-9442. G

**Personals**

**To** all Northrop friends of Alice Valentine—your help, calls, visits, contributions, & words of comfort were deeply appreciated. May we again express our thanks & gratitude at this time. THE VALANTINE FAMILY & BETTY MCLELLAN. L

**Wish** to start historical society. Anyone interested in Northrop history call Torrance, 370-3752. L

**I** would like to express my warm thanks & appreciation to the many friends & co-workers in Research & Technology for their concern & help during my recent illness. JULIE. L

**Dog** wanted, male, medium to large breed, free. Torrance, TE 4-0309. L

**For Sale or Trade**

**Cabin Cruiser**, 18', Chrysler 6-cyl. inboard, \$750 & ski boat, 17', 312 T-Bird eng., \$500 or trade on both for camper. Hawthorne, 644-1722. M

**Luau Tickets on Sale**

Planning to attend that big all-Northrop Luau October 7 at "The Tikis" in Monterey Park?

If so, it's time to act now. Only 2,000 tickets will be sold on a first-come, first-served basis. They are available now at Personnel Activities outlets throughout Northrop facilities.

The price is \$6 per person and includes dinner, dancing, entertainment and full use of more than three acres of tropical paradise reserved just for Northrop.

**Hawaii Meeting Set**

Initial NRC Travel Club meeting for Northrop employees interested in the annual NRC year-end Hawaiian Holiday will be held at 8 p.m., Friday, at the Alondra Club, 16411 Prairie Avenue, Lawndale.

Contact Blanche Cook, ext. 2486 at Norair, for reservations.





**PLANNING FOR PRODUCTION** facilities for aircraft stringers to be used on Boeing 747 are Merrill Skilling (left), chief Plant Engineer, and Grant Gunderson, chief of Production, at Nortronics Anaheim. New capability for fabricating these vital structural units is one of the reasons Nortronics Anaheim has gone through extensive rearrangement over past months. Scale model, used for planning purpose, is of Building Y-12 where stringer production will center.

## PPD ACQUIRES RIGHTS TO 'DART' SENSOR

A product line of unusually small rate sensors, which have demonstrated high performance in several aerospace control and stabilization applications, has been acquired by the Nortronics Precision Products Department in Norwood, Massachusetts.

The sensors, called dual-axis rate transducers (DART), have only one moving part. They were developed by a Michigan firm, and manufacturing rights were acquired by PPD.

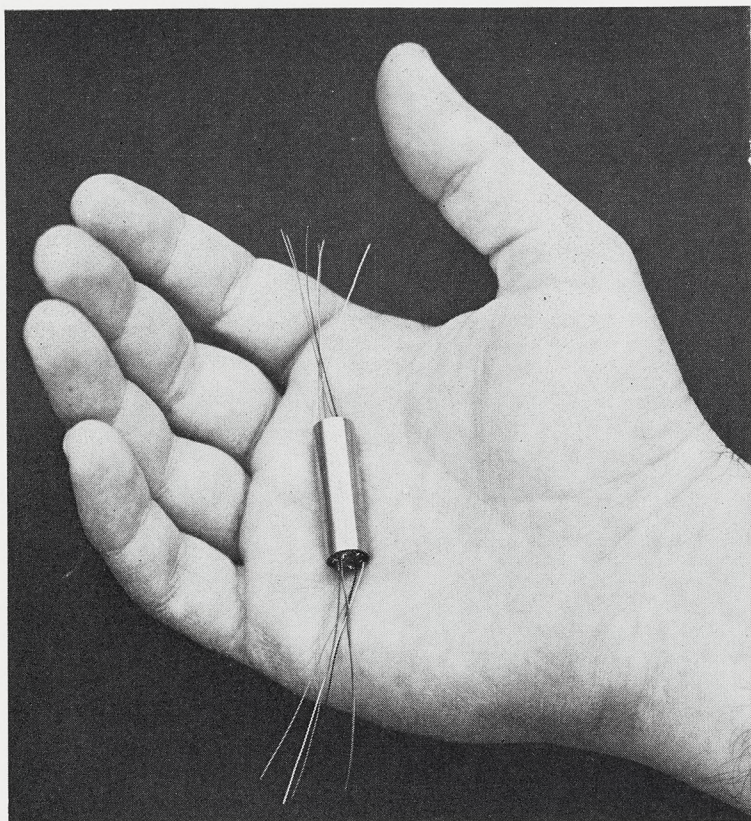
"They have a wide dynamic range and broad frequency response, and can withstand rugged inertial environments," a PPD

official said.

The miniaturized devices weigh less than three ounces, and are small enough to fit in a teacup. Their small size makes them especially versatile for a wide variety of uses.

Roland Pittman, who had been with the firm which developed the new sensors, has joined PPD as product manager.

Leo Hook, PPD director of Product Management, called the acquisition of the new sensors "a major enhancement of PPD's product line, and one which will strengthen our position in the market place."



**NEW FAMILY**—Part of the new DART family of sensors being manufactured by the Nortronics Precision Products Department is this tiny micro multi-function sensor (MFS). DART means dual-axis rate transducer. Acquisition of the new sensors gives PPD additional strength in that field.



**YOUTH LEADERSHIP**—These are 12 of the 14 graduates of the Northrop Toastmasters Club's Youth Leadership Training Program, a speech training course. They are (from left) Phyllis Weaver, Alan Johnston, Cheryl Feenstra, John Cahill, Renee Pelletier, Mike Gan-

non, Jo Ann Brown, Jim Ulrich, Kathy McDonald, Don Hicks, Monica Knight and Chris Duffy. Not pictured are Vicki Emry and Nancy Hicks. All but three are sons and daughters of Norair or Nortronics employees. A similar class will begin in January.

## ANAHEIM

(Continued from Page 1)

considerations were involved.

Nortronics elected to house this entire production effort under a single roof for maximum efficiency. Building Y-12 was earmarked for this purpose. First, however, it had to be cleared of programs being carried out there.

Thus followed a series of relocations.

Work on the Hawk Program shifted to Y-2, along with production and assembly of T-38 and F-5 components. The SUU-20A bomb and rocket dispenser effort also shifted to Y-2.

Since September 1966 Anaheim has been establishing and relocating its ordnance activities in leased facilities located away from the main plant in what is now known as Buildings Y-41, 42 and 43. Most ordnance activities are now centered there.

No change was made in such activities as Machine Shop, Processing, Weld, which support all Anaheim programs. They remain in Building Y-1, along with the Polaris Support Depot, major electronic assembly efforts and related projects.

By late this year the major changes, some of which date back 18 months, will be completed and Nortronics Anaheim will have settled down once again, but remains a site where the action is.

## Coin Club Issues Bronze Medal as Commemorative

A limited number of the Northrop Coin Club's 20th anniversary commemorative medals has been set aside for purchase by Northrop employees, Club Commissioner Dick Reamer has announced.

The bronze medals are 1 3/8 inches in diameter, slightly larger than a half dollar. One side is engraved "1947-1967, twentieth anniversary, Northrop Coin Club." On the other side is the legend, "Northrop Corporation—from air age to the edge of space," along with likenesses of an old-fashioned prop-driven aircraft, a sleek jet and a wingless lifting body vehicle.

Medals may be purchased at the Norair Personnel Activities office in Plant One for \$2. They also are available at Nortronics Hawthorne, Nortronics Anaheim, Nortronics Palos Verdes, and the Norair Palmdale and Edwards facilities. Information may be obtained by calling Blanche Cook on Norair ext. 2486.

## FOURTEEN HONORED

### Service Pins Presented

E. Clayton Tait heads a list of veteran Northrop Nortronics employees on the West Coast who are eligible for 15, 20 and 25-year Northrop service awards during September.



Mr. Tait

Mr. Tait has observed his 25th anniversary of working with Northrop. He is a mechanic—sheet metal in the Hawthorne Manufacturing function for Northrop Systems Laboratories' Operations section.

Jennings Stouder and Grace

Dominick are completing their 20th years of Northrop service.

Eligible for 15-year service pins are Calvin Friess, Charlie Smith, Virginia Pace, D. Paramore, Ernest Obermayr, George Shelton, Mary Graupmann, Pauline Cuenod, Albert Nadel, W. J. Oakes, jr. and Elkanah Hewitt.

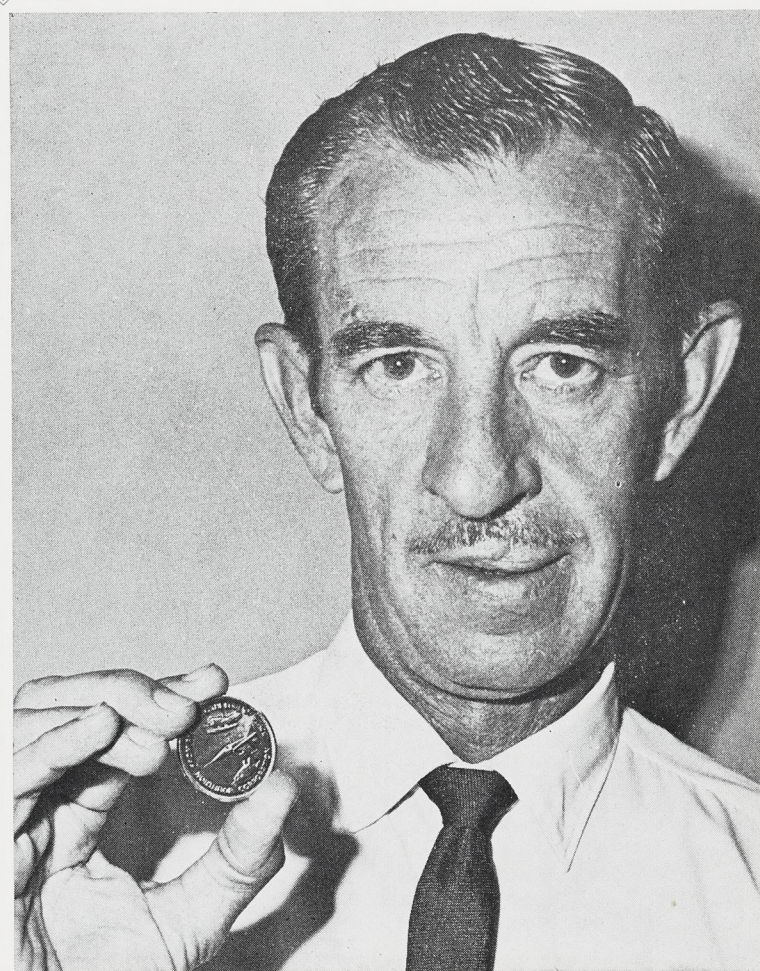
### Awards Presented To Anaheim Golfers

Champions have been crowned in Nortronics Anaheim NRC's annual Twilight Golf Leagues held through the summer months.

Vito DePaul and Whitey Hampton won the men's crown in the league held at Alta Vista Country Club. Pat Richards and Evelyn Price, Nortronics Anaheim employees, won the women's version, held at Brea Golf Course, in a playoff with two Nortronics wives, Joyce Benedict and Dee Davis.

## Campers To Meet

The Northrop Wanderers will meet at 7:30 p.m. October 4 at NRC Clubhouse, Hawthorne, to map final details for an October 13-15 camping trip to Zuni Campground, north of Saugus.



**TWENTY YEARS**—Dick Reamer, NRC Coin Club commissioner, displays a bronze commemorative medal, marking the 20th anniversary of the club's founding. Northrop employees may purchase the medal for \$2 at all facilities. Only a few hundred are available.



# NORTHROP NEWS

NORTHROP NORTRONICS

Published biweekly by Northrop Corporation, Beverly Hills, California

Vol. 25, No. 20

October 11, 1967



*WHAT A PLACE FOR A BEE—Long row of honeycomb detail units await next production task at Nortronics Anaheim. Ultimately, these units will become the core of bonded honeycomb wing assemblies for the Hawk mis-*

*sile. This production effort has continued unabated since the mid-1950's at Anaheim. Anaheim also produced large quantities of launchers and loaders for the Hawk program and continues to provide major overhaul tasks as needed.*

## C-5 Gyros Delivered For Air Force Testing

The Northrop Nortronics Navigation department has completed delivery of three GI-K7G gyros, produced by the Precision Products department, and three Kearfott Series 2401 accelerometers to the Central Inertial Guidance Test Facility at Holloman Air Force Base, New Mexico.

These components are the critical sensing devices contained in the Nortronics Inertial-Doppler Navigation Equipment (IDNE), which will automatically navigate the giant U.S. Air Force C-5A Galaxy transport. The C-5A is in production at Lockheed-Georgia Company, Marietta, Georgia.

Ted Campbell and Les Cyr of Nortronics Instrumentation Evaluation and Test have assisted Holloman personnel under Major A. B. Loggins, cognizant officer for C-5A testing.

The Holloman guidance facility is chartered by the Department of Defense to objectively test and evaluate the performance of all inertial guidance systems and critical components built by contractors for military use.

In recent years, Holloman has independently evaluated elements of the Nortronics guidance system for Skybolt, as well as the current Nortronics Suitcase Inertial Navigator (NIS-105). The test facility also has evaluated guidance systems made for the military by several other suppliers.

R. A. Lindsey, C-5A deputy program manager, said Nortronics will deliver to Holloman next year an entire IDNE for evaluation, along with ground equipment, instrumentation and support equipment.

Flight testing in an Air Force C-130 will complete the program.

The rigorous testing conducted by this government agency has

proved to be a valuable supplement to Nortronics' own exhaustive testing program, Mr. Lindsey said.

The C-5A, to be the world's largest military airplane, will begin to roll off the assembly lines next February. Its maiden flight is scheduled for next June. The Air Force's Military Airlift Command will receive the first operational C-5A a year later.

The huge fanjet, capable of flying 500 miles an hour, will be 245 feet long, and 65 feet high, and will have a 223-foot wingspan.

A proposed commercial version could carry more than 700 passengers.

## Navy Awards First Contract For Omega

The United States Naval Electronic Systems Command has issued a \$1,686,087 contract to Northrop Nortronics, Congressman Charles H. Wilson announced last week in Washington.

Under the terms of the contract, Nortronics will produce 140 units of the AN/SRN-12 Omega shipboard navigation receiver. This equipment will provide surface vessels and submarines with rapid and extraordinarily accurate position fixes on a worldwide 24-hour basis under all weather conditions.

This award represents the first production contract for the Omega shipboard receiver, and follows a successful completion of 10 service test models, also designed and built by Nortronics, at its Hawthorne Facility.

### RECORDS FALL

## Blood Drive Successful

A unique four-part blood bank program which began in July and concluded early last month has produced a record 461 pints of blood for Northrop's Blood Program.

In the past, single bloodmobile

visits to the Hawthorne complex have been held quarterly. This year, due largely to the scattered location of work stations and the desire of personnel manning these stations to take part in the program, four separate bloodmobile visits were carried out.

The results: July 7 Torrance facility personnel donated 35 pints; July 17 Santa Fe facility personnel added 67 pints; September 6 personnel at the main plant, including Nortronics Hawthorne, gave 320 pints; and September 8 Mariposa personnel added 39 pints.

The total: 461 pints.

Marie Tully, Blood Program administrator, indicated much credit for the successful effort went to coordinators at each location.

### Stamp Club Plans Christmas Program

Postage stamps, both U.S. and foreign, catalogues and albums can help make Christmas a little nicer for kids, especially for those who need a little cheering up.

The Northrop Stamp Club is soliciting these items for Christmas gifts to be given to children in area convalescent homes and hospitals.

Contributions may be brought to club meetings in the NRC Clubhouse in Hawthorne or sent to Ed Wojnar, Post Office Box 5006, Inglewood.

### Airplane Club To Meet

The Northrop Model Airplane Club meets at 7:30 p.m., October 18 at NRC Clubhouse, Hawthorne.

### Trophy Race Set

The 1967 Aerospace Trophy Race will be held from 11 a.m. to sunset Sunday outside of King Harbor, Redondo Beach.

Northrop Sailing Club will send its top speedsters into competition against boats representing TRW, according to Commodore Jim Reeder of the NRC-sponsored club.

Don Wilson is rear commodore of the Northrop club. Dick Flude is vice commodore.

## Nortronics Chosen as Site Of Palos Verdes Art Show

More than 100 of Southern California's finest artists and craftsmen will display their works this weekend on the grounds of Nortronics Palos Verdes, site of the fifth annual Palos Verdes Community Arts Association Art Show.

Among the artists participating will be members of the Nortronics Art Club.

The show will be held from 11 a.m. to 6 p.m. Saturday and Sunday on the lawns and parking areas of Nortronics. Last year, more than 5,000 persons attended the two-day show, held at Nortronics for the first time. This year, a two-day attendance of 6,000 is anticipated. Sally MacAller of Rolling Hills Estates, co-chairman last year, is chairman.

Northrop Nortronics personnel

will be admitted free by showing their I.D. badges at the gate.

A new highlight will be a "film happening," to be shown on the patio area in front of the Administration Building. The "happening," similar to "Kaleidoscope," the most popular exhibit at Montreal's Expo '67, involves the use of related films shown simultaneously on all four walls.

Oils, water colors, sketches, collages and other modes of painting will be displayed. Potters will demonstrate the use of their wheels, and will display the finished products. Sculptors, jewelry makers, leather craftsmen and other top amateurs and professionals also have been invited. Many of the works shown will be for sale.

For children, a series of puppet shows has been scheduled.



**ART IN PALOS VERDES** — Framed by a bronze-like statue created from fiberglass, visitors to the Palos Verdes Community Arts Association Art Show gather outside the Nortronics

Palos Verdes Administration Building, in a photo taken at last year's event. This year's show will be held Saturday and Sunday at Nortronics.



# Officials Participate In Management Class

Sixteen high level managers from three divisions and the Corporate headquarters are attending a conference today in Woodland Hills.

The executives are participating in an advanced management course described as "an event to be experienced rather than an event to be observed."

The course, which meets twice weekly through January 17, is being administered by the Northrop Corporate office of Management Development.

The course primarily emphasizes that the nature of business institutions and economic processes is dynamic and evolving. Its intended effect is to make the individual manager more aware of and adaptable to a changing industrial environment.

"The manager of a business today faces problems quite different from those encountered by managers of just one generation ago," according to John Rushmer, Corporate director of Management Development and course administrator.

"He faces the challenge of a rapidly changing environment, stemming in part from the continuing technological revolution of the past 15-20 years. He faces problems created by the influence on business management of changes in the economic, political and social environment in which business operates in a free

society. These factors cannot be ignored."

Specific purposes of the course are:

(1) To widen the individual manager's perspective through increased knowledge and understanding of our own economy and the world situation.

(2) To help achieve a deeper awareness and understanding of the nature of the changes which are taking place in the economic, political and social environments in which business operates.

(3) To aid in relating this knowledge of change to his own managerial responsibilities.

(4) To provide an opportunity for each participant to develop for himself a new frame of reference for his managerial thinking, and to stimulate its further development through a desire for deeper knowledge and more effective patterns and habits of thought and action.

Participation involves a large amount of outside reading in business management, economics, government and sociology and eight hours of discussion weekly on Tuesday afternoons and Wednesday mornings.

The advanced management course is but one phase of a multi-faceted management development program at Northrop which is designed to insure that competent management personnel are available to meet present and future corporate-wide needs.

Attending the present course from Northrop Ventura are:

Larry Carroll, program manager for Boeing 747 wing fairings; Ben Collins, manager of Aeronautical Systems; Rex Fairless, director of Industrial Relations; Tom Flannigan, vice president—Marketing and Planning; John Flores, deputy Engineering department manager; Welko Gasich, Corporate vice president and general manager; Mort Maurer, vice president—Production Operations; Harold E. Riggins, vice president—Administration and assistant general manager; Walt Sternadel, vice president and manager of Finance; Wes Steyer, Apollo program manager; and Bob Young, Quality Control manager.

Attending from Nortronics is Don Lewis, treasurer. Jim Willson, Corporate vice president—Finance, and Thomas A. McDougall, director of Plans, Northrop International, are attending from the Corporate offices. W. A. Whitman, manager, Estimating and Pricing, is attending from Norair.

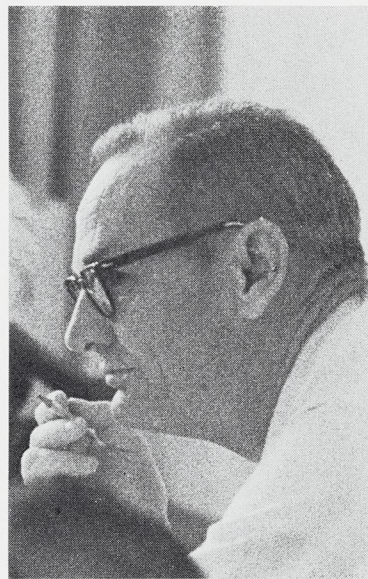


**MANAGEMENT MEET**—Officials from Northrop Ventura, Nortronics, Norair and the Corporate office discuss management goals during a meeting in Woodland Hills. The twice-weekly seminar is coordinated by the Corporate office of Management Development.

ing a meeting in Woodland Hills. The twice-weekly seminar is coordinated by the Corporate office of Management Development.



**CONCENTRATION** — Don Lewis and Welko Gasich (left photo) and Ben Collins (right photo) are among the 16 Northrop Corporation executives attending an advanced management course through January 17 in Woodland Hills.



## Disneyland Night Planned for 27th

A full evening of Disneyland fun for only \$3.75 per person is being offered Northrop employees through the courtesy of the Association of the United States Army.

The date is October 27 and tickets are now available through Northrop Personnel Activities outlets.

The single price is good for admission and unlimited use of all Disneyland rides, attractions, plus entertainment features.

## 'Gone With the Wind' Tickets Available

They have "modernized" (wide screen, stereophonic sound) the film classic "Gone With The Wind" and Northrop Recreation Clubs are planning a special theatre party to see it.

The date is November 4 at 2 p.m. at the Fox Carthay Theatre.

Discount tickets (\$2.40 for orchestra and loge, \$2 for orchestra and balcony) are now available through normal NRC ticket outlets at all facilities.

## Robert R. Miller Wins Trusteeship In NSIA Election

Robert R. Miller, Northrop Corporation senior vice president of Corporate Relations, has been elected to the National Security Industrial Association's Board of Trustees, and re-elected as a vice president of the group.

Mr. Miller, who will be serving his fourth consecutive term as an NSIA vice president, was one of 10 new trustees named by the organization.

His election to both positions was announced on September 28, following the 24th annual NSIA membership meeting in Washington, D.C.

Glenn R. Lord, Corporate vice president of Marketing, was installed last month as a member of the Executive Committee of NSIA's Los Angeles Chapter.

## HALLICRAFTERS AWARDED A.F. CONTRACT

Hallcrafters Company has been awarded a \$1,934,350 initial increment to a \$3,868,700 letter contract for the manufacture of countermeasure equipment.

It was awarded by the Aeronautical Systems Division of the

United States Air Force.

Hallcrafters, Chicago-based subsidiary of Northrop Corporation, is a veteran producer of countermeasure equipment for the Department of Defense and other governmental agencies.

## IN UTAH WILDERNESS

# Northrop Family Discovers Indian Cave

There are many possible names for it—womanly intuition, clairvoyance, instinct, a whim . . .

Frank Fefferman, 747 project coordinator at Northrop Ventura, advises call it what you like, just don't ignore it. At least if it involves his wife, Barbara.

Recently, it led his family to discover an unmarked cave, one occupied by Indians between 1100 and 1200 A.D. This find could be an important archaeological event which could shed light on a long-ago era.

Mr. and Mrs. Fefferman and their five youngsters (ages 2½ to 11) have developed a keen interest in this particular period. It began in the summer of 1966 when they toured Arizona to visit cliff dwellings and Pueblo ruins and restorations. Most of these date back to the 1200-1500 A.D. period.

This summer they continued their exploration by going to the "four corners" area where Arizona, Utah, New Mexico and Colorado meet to visit other former Indian habitats.

One of their stops was at Canyonland National Park south of Moab, Utah. Although larger

than the state of Maine, this new (formed in 1964) park is still remote, primitive and off the beaten path for tourists. It is the type of area the Feffermans like best.

They were bucking along a narrow, two-rut road at about six miles per hour when Mrs. Fefferman suggested they stop to visit a cave she had seen. Mr. Fefferman declined, since he had seen no cave. Mrs. Fefferman persisted. They backed up a half-mile and climbed about 50 yards above the roadway.

"It was a cave all right, about 15 feet wide at the entrance and hardly more than three feet high at its tallest point," Mr. Fefferman said. "Movies taken of the area later showed nothing. I still don't know how Barbara saw it."

Inside the cave was evidence it had been occupied—dried corn cobs, smoke-darkened ceiling and bones.

The family refused to disturb anything within the cave or to press deeper into it for fear of damage. Instead, they drove to the park headquarters and reported their find. Maps there

showed no indication there was a cave in the area. The park Rangers asked if the Fefferman family would show them the cave.

"By this time we were excited," Mr. Fefferman said. "So all of us piled into a park vehicle and went back."

From preliminary analysis of the cave the Rangers said it was in use 100 years prior to building of most cliff dwellings and pueblos. The bones were from an animal that had been cooked. There was also a skeleton of a large cat animal. Outside was evidence smoke had exited from other points, indicating the cave was much larger than it appeared.

The Rangers thanked the Feffermans for their find, for leaving it undisturbed. They also noted the family was the first "strictly tourist" group to find an unmarked cave in the park. And they promised to keep the family posted of findings when a trained crew digs deeper into the cave for possible artifacts.

And they gave the young Feffermans some of the bones, the cat skeleton and some rock chippings.



**FROM AN INDIAN CAVE**—Frank Fefferman of Northrop Ventura, his wife, Barbara, and their five children examine artifacts found in an Indian cave Mrs. Fefferman discovered in Utah this summer. The cave was inhabited about 800 years ago.



Classified

Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private businesses are not accepted. The Northrop News reserves the right to edit or omit ads. Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 62. Ads are limited to one item and one ad per person each issue. Deadline is noon Wednesday, one week before publication.

**For Sale**  
**Tanks**, 4 dble. 44 Sportway, 2 Orca Sportways waterlung regulators & 2 sea valve pressure gages, \$200. Long Bch., 591-3058.  
**Pups**, poodle, AKC reg., 3 mos. old, \$125-\$150. Culver City, 837-0701.  
**Mustang** 2+2, 1967, air, auto. trans., console, p/s, p/b, r/h, b/seat, 289 cu. in., 7,000 miles, \$3,300. Garden Grove, 714-897-9815.  
**Table**, 4 chairs, \$10. Box 2001.  
**Boat**, 16' Overnighter, fiberglass o/plywood, 50 h.p. Johnson elec., lge-whl. trailer, \$750. P.V., 377-4943.  
**Home**, 2-bdrm., Spanish stucco, dining rm. or convert. den, lge. kitchen, service area, h/wood floors, detached dble. gar., 50 x 150 R-3 lot, near Norair, \$25,950. L.A., 755-4534.  
**Den Furniture**, rattan, bar & 2 stools, 2-pc. couch, corner table, lamp, side table, chair & ottoman, \$130. P.V. Pen., 377-1094.  
**Oldsmobile**, 1962, p/s, p/b, p/windows, \$1,100. Long Bch., 423-0843.  
**Typewriter**, Underwood standard, \$65. P.V., 676-1085.  
**Chairs**, 2 French Provincial, gold slip covered, \$50. Anaheim, 714-635-1686.  
**Sloop**, 35' Lion class, fully equipped, 4 yrs. old, all teak w/fiberglass decks, sleeps 6, rdf, ship-to-shore, TV, \$12,500. Torrance, 830-3792.  
**Ford**, 1963 Fairlane 500, V-8, auto., solid-state radio, htr., factory air cond., \$795. L.A., 754-0098.  
**MGA**, 1960, new engine, \$500. L.A., 756-1431, ext. 215.  
**Acreage**, 2 acres, commercial, 157' frontage on Hwy. 41, Coarsegold, Calif., \$9,500. Hawthorne, 644-4241.  
**Couch**, orange Naugahyde, \$20. Gardena, 675-3254.  
**Trailer**, 1964 Aristocrat, 13', \$200 down & take over \$28.12 pymts., \$962 bal. Orange, 714-637-8648.  
**Dinette Set**, walnut formica top, 4 white Naugahyde-covered chairs, \$35. Hermosa Bch., 379-6404.  
**Ford**, 1959, 2-dr., \$149. Box 2002.  
**Backyard Swing**, child's, set inc. slide, \$17. Inglewood, 672-5798.  
**Hair Dryer**, Sunbeam, portable, \$10. Manhattan Bch., 545-1662.  
**Transmission**, 1937 Cadillac-La Salle, \$45. Inglewood, 677-6387.  
**Camper**, 8', 1/2-bed over, \$400. Redondo Bch., 374-3539.  
**Boat**, 14', 30 h.p. Mercury eng. & trailer, \$350. Inglewood, 671-8672.  
**T-Bird**, 1962, h/top, full power, new brakes, \$795. P.V. Pen., 377-2612.  
**Bicycle**, boy's 10-spd. Deraillleur, \$20. L.A., 757-3595.  
**Golf Clubs**, custom built, Gary Player made by professional golf co., extra long, 2 iron through 9 iron plus pitching wedge, \$60. Torrance, 542-2020.  
**Sofa** & chair, Early American, quilted print, used 8 mos., \$140. Hawthorne, 675-8813.  
**Racing Engine**, '58 Chrysler short block, spare block, blast shield, all new & assembled, \$300. Lawndale, 676-2986.  
**Cemetery Lot**, in Inglewood Park, Pleasant View sec., may be used for dble. interment, \$450. Torrance, 326-4379.  
**Station Wagon**, 1961 Falcon, auto., r/h, rebuilt eng., \$475. Sepulveda, 894-8490.  
**House**, 3-bdrm., 1 bath, cpts., dps., fireplace, lge. back yard, walking distance to schools, 2 miles from Nortronics Anaheim, \$19,850. Fullerton, 714-879-7625.  
**Home**, 3-bdrm., 1 1/2 bath, cpts., natl. fireplace, shutters, sprinklers, service porch, all appliances, walk to Northrop, att. dble. gar., encl. yard., \$24,500. L.A., 754-8897.  
**Speakers**, 2 12" Norelco, model 9760-M, both for \$15. Gardena, 324-7097.  
**Bird Cage**, 16" dia., 48" tall, w/7" high stand, all accessories, \$20. Hawthorne, 675-3525.  
**Bunk Beds**, convert to twin beds, hard rock maple, spool design, \$25. L.A., 755-1925.  
**Camera**, Nikkorex F, single lens reflex, f/2 lens w/lock-in meter, leather case, 2 yrs. old, \$100. Gardena, 327-8251.  
**Oldsmobile**, 1962 Dynamic 88 Holiday cpe., Hydromatic, radio w/rear speaker, htr., p/s, p/b, w/s/w tires, \$925. Rolling Hills, 378-2532.  
**Jeep Top**, all steel, full cab w/doors, wind-up windows, hinged back, made by Koenig, \$165. Los Alamitos, GE 1-0843.  
**Chrysler**, 1961 New Yorker, 4-dr. sedan, full power, air, \$750. Hawthorne, 631-8748.  
**Boat**, Y5 outboard w/trailer, 40 h.p. Scott, new cover, \$550. Hawthorne, 676-5186.

**For Sale**  
**Motorcycle**, 1967 Suzuki, 80cc Scrambler, less than 500 act. miles, free 1,000 service, 12,000 mile warranty, \$295. Garden Grove, 714-539-1072.  
**Honda**, 1966 305 Scrambler, extras, \$400. Lawndale, 675-4305.  
**Mustang**, 1965, 2+2, air cond., 4-spd., p/s, \$1,995. Manhattan Bch., 372-2759.  
**Oscilloscope**, Eico 460 5" wideband d.c., cost \$140; \$100. Hawthorne, 676-9858.  
**Bicycle**, boy's 10-spd., \$30. Lennox, 672-2370.  
**Camera**, 35mm single lens reflex, Honeywell Pentax H3 w/f1.8 Takuman lens, Honeywell C.d.S. lightmeter, soft case, \$135. Manhattan Bch., 374-6003.  
**Washing Machine**, Bendix, \$20. Gardena, 324-7059.  
**Plymouth**, 1959, '64 383 cu. in. w/tri-power, c. & O. 4-spd. Hydro, chrome whls., stereo, b/seats, \$550. Westchester, 674-8997.  
**Motorcycle**, 1962 Triumph, 650 cc, \$625. Hawthorne, 679-4063.  
**Corvair**, 1960 coupe, 3-spd. trans., r/h, \$250. P.V., 377-5450.  
**Receiver**, Hallicrafters S-108, 10-80 meter, reconditioned, internal speaker, \$65. Westchester, 645-8711.  
**Station Wagon**, 1957 Ford, 2-dr., good tires, new radiator & battery, \$200. Inglewood, 677-6375.  
**Encyclopedia**, set of Americana, 1959 edition, supplements through 1964 & case, \$150. Inglewood, 671-2930.  
**Guitar**, Fender precision bass, w/case, cost \$290; \$200. Hawthorne, 644-6752.  
**Airplane**, 1962 Cessna 150 1FR commuter, 360 channel MK. 12 w/V0A4, marker beacon, 750 hrs. s.m.o.h., 2050 hrs. total, rotating beacon, \$4,295. Santa Ana, 714-838-2437.  
**Mobile Home**, 2 yrs. old, 12' x 55' 1-bdrm., w/room added, located in Torrance, \$6,500. P.V. Pen., 370-6430.  
**DeSoto**, 1954, auto. trans., p/s, p/b, \$75. Torrance, 834-8280.  
**Go Kart**, Walley Baynes Special, Parilla eng., lots of extras, \$375. Torrance, 323-4257.  
**Home**, 2 yrs. old, 3-bdrm., family rm., 2 baths, G.I. or conventional loan, terms to suit, new area, \$25,900. Dominguez Hills, 714-639-2880.  
**Dishwasher**, General Electric convt., front load, used 3 mos., orig. cost \$249; \$125. Yorba Linda, 714-528-9227.  
**House**, G.I. loan w/nominal dn., 2-bdrm., lge. kitchen, new dps., garb. disp., wired 220-V, fenced yd., h/wood flrs., attach. gar., newly painted, \$19,750. Whittier, 643-1028.  
**Honda**, 1965 Scrambler, new paint, \$325. Inglewood, 677-7382.  
**Desk**, steel, 24 x 48, contemporary style, 3 lockable side drwr., & 1 center drwr., inc. matching swivel chair, orig. cost over \$270; \$95. Los Alamitos, 596-0521.  
**Office Desk**, 30" x 60", \$20. Inglewood, 678-0250.  
**Sofa**, 16' curved sectional, silk material, olive green, \$225. L.A., 463-5337, 465-3476.  
**Corvair Monza**, 1961, new tires, needs minor eng. work, \$300. Huntington Bch., 714-962-3192.  
**Pool Table**, National, 10 x 4 1/2 professional snooker-type, \$850. Gardena, 327-5925.  
**Home**, 4-bdrm., block wall, patio, bltin barbecue, fireplace, \$31,750. Box 2003.  
**Snare Drum**, blue metal flake, stand, case, brushes, \$40. Hawthorne, 675-2761.  
**Dishwasher**, G.E., portable, wood top, \$175. Gardena, 329-6420.  
**Metropolitan**, 1957 h/top sedan, good running eng., good tires, \$125. Torrance, 323-9887.  
**Surfboard**, 9'6" Jacobs, \$30. Inglewood, 756-4424.  
**Chevrolet**, 1957, auto. trans., tuck & roll uphol., mag. wheels, \$400. Torrance, 378-5924.  
**Home**, stucco, 3-bdrm. & den, 2-baths, patio, 2-car gar., cpts., lawn sprinklers, cement block wall, \$21,995. Inglewood, 671-8401.  
**House**, 3-bdrm., 12 yrs. old, 1 1/2 & 1 3/4 baths, cpts., dps., covered patio w/brick b-b-cue, fenced yd., dble. car gar., 10 minutes from Northrop, \$25,500. Hawthorne, 675-7049.  
**Ford**, 1960, o/hauled recently, front end align. within last 200 miles, \$250. Hawthorne, 676-1632.  
**Ski Boat**, 14' Champion, canvas cover, internal controls, 18 h.p. Johnson & trailer, \$395. L.A., 933-6731.  
**Pickup**, 1955 1/2-ton Ford, w/complete new eng., trans. & tires, 815x158" wide rims, half-shell camper, stereo tape unit, \$600. Box 2004.  
**Chevrolet Impala**, 1967 sports coupe, stick shift, 13,000 miles, \$2,300. Simi, 805-526-4516.  
**Rambler**, 1966 American 220, 2-dr., 6-cyl., 17,000 mi., auto. trans., htr., \$1,675. Torrance, 326-0905.  
**Oldsmobile**, 1965 Delta Holiday, cpe., air cond., \$2,300. Gardena, DA 4-8445.  
**MG-TF**, 1954, spoke wheels, new top, & battery, good tires, \$1,100. Fullerton, 714-529-8379.  
**Volkswagen**, 1965, 29,000 miles, radio, rear opening windows, h/rest, sway bar, \$1,195. Manhattan Bch., 376-5139.  
**Chevrolet**, 1956, stick shift, 6-cyl., \$100. Inglewood, 823-2349.  
**Studebaker**, 1961 2-dr. h/top, V-8, stick, r/h, new brakes, \$250. Redondo Bch., 376-6109 before 3 p.m.  
**Porsche**, 1960, 1600 model, \$1,800. Torrance, DA 9-9670.

**For Sale**  
**Barracuda**, 1967 fastback, r/h, V-8, 4-spd., take over \$89.57 mo. pymt., approx. bal., \$2,700. Torrance, 370-5458.  
**Rambler**, 1966, 6-cyl. stick, take over \$67 mo. pymt., approx. bal., \$1,500. Redondo Bch., 542-1248.  
**Falcon**, 1963 Ranchero, 260 V-8, 4-spd., Crager wheels, wide ovals, \$725. L.A., 645-1523.  
**Bedroom Furniture**, girl's 5 pcs. plus student desk, white formica & wrought iron, mattress & box spring, \$85. L.A., 836-1210.  
**Airplane**, Ercoupe, 1946, 85 h.p. metal prop, KY-90 radio, 296 s.m.o.h., 107-TT, \$2,150. Rolling Hills Ests., 325-3057.  
**Laundry Tray**, cast iron enamel finish, med. size, \$12. Torrance, DA 3-8797.  
**Cedar Chest**, \$25. Westminster, 714-897-0597.  
**Boat**, 16' w/7' beam, Mark 75 o/board motor, trailer & all equipment, \$750. Hawthorne, 679-2041.  
**Chord Organ**, Performa, 40-bass, portable, \$35. Torrance, 370-6734.  
**Motorcycle**, 1955 Goldstar Catalina BSA, complete new lower end & upper, desert bike, \$400. Inglewood, 671-9067.  
**Wig**, frosted, hand-tied human hair, \$75. Torrance, 378-1983.  
**Poodle**, toy, AKC reg., white, female, 8 wks. old, \$65. Lawndale, 542-1257.  
**Stud Organ**, toy Dachshund, red, 5 1/2 lbs., AKC reg., \$35. Los Alamitos, 430-9863.  
**Bicycles**, 2 24" Schwinn, \$12 ea. Torrance, 378-4567.  
**Skis**, Hart Standards, 205 cm & 1 pr. 155 cm w/Nevada bindings, \$69. Manhattan Bch., 545-5995.  
**Piano**, spinet, \$325. Torrance, 375-7665.  
**Porsche**, 1600, 1959, good tires, silver w/black int., \$1,600. L.A., 657-6964.  
**Station Wagon**, 1964 Chevrolet, \$1,595. Lawndale, 675-7739.  
**Lincoln**, 1956, rebuilt eng., good tires, full power, \$200. Hawthorne, 964-4048.  
**Honda**, model C-110, 60 cc, 1963, 3-spd., \$110. Lomita, 325-4580.  
**Station Wagon**, 1963 Pontiac 9-pass. Catalina, p/s, p/b, factory air cond., \$1,475. P.V. Pen., 377-3806.  
**Ford**, 1960, Fairlane 500, r/h, w/s/w, new brakes & Naugahyde int., \$300. Hawthorne, 676-9593.  
**Sewing Machine**, White, blond wood desk model, forward & reverse stitch, w/attachments & buttonhole maker, \$60. Hawthorne, 675-4752.  
**Aquarium**, 22-gal. show tank, complete w/stand & fish, \$25. Hawthorne, 675-1847.  
**Sofa**, Danish modern, chair, 2 end tables, & coffee table, orange & brown reversible cushions, \$100. Torrance, 371-1439.  
**Dinette Set**, Formica table top, w/extra lge. 4 chairs, metal legs, \$10. P.V. Pen., 377-7156.  
**Ford**, 1960 Falcon, new 1967 racing eng., trans., clutch, rearend & 4 750x13 tires, cheater slicks, 71/2 wide, 3-spd., Fenton Myst/shifter, \$750. Torrance, 371-7383.  
**Lot**, corner, 180° view of ocean, all underground utilities, \$1,000 dn., owner carry bal. at 6%, terms negotiable, \$22,900. Rolling Hills Ests., 377-0146.  
**Pickup**, 1958 Chevrolet 1/2 ton, r/h, stick shift, good tires & metal trailer, \$500. Lawndale, 676-6726.  
**Divans**, 2, dinette set, end tables, stove, Gaffers & Sattler, many other items, \$170 or sell separately. Gardena, 324-7623.  
**Machinists Tools**, tool box, mikes, 3 1", set of mikes 2" to 5", 2 sets inline mikes, Calipers Vernier in & out, precision blocks, misc. equipment, approx. \$300 value, \$150. Long Bch., 429-2286.  
**Engine**, VW 1961 Microbus, 1200 cc, complete, approx. 58,000 miles, \$175. San Pedro, 833-4191.  
**Sailboat**, 35'x31'x24'x36" Trimaran, king size twin beds, aux. outboard, \$14,500. Box 2005.  
**Bed**, twin, mattress, box springs, metal roller frame, \$15. Manhattan Bch., 379-3487.  
**Typewriter**, Smith-Corona Galaxie II, portable, w/case, cost \$110; \$75. Manhattan Bch., 545-1348.  
**Cabin Cruiser**, 25' Esseness, 185 h.p. Interceptor, fiberglass hull w/fully equipped cabin, many extras, \$3,595. Miraleste, 831-5615.  
**Trailer**, Ranger, fiberglass, fold-down, easy tow, sleeps 2 adults, 2 children, stove, ice box, sink, 18 gal. water tank, p/proof tires, cost \$1,800; \$495. L.A., 645-2788.  
**Triumph TR-4**, 1965, 2 tops, \$2,100. Anaheim, 714-847-4871.  
**Pup**, miniature Dachshund, red female, AKC champion stock, 5 mos. old, \$70. Torrance, DA 5-7806.  
**Tempest**, 1963 LeMans convt., r/h, new w/s/w tires, \$500. Torrance, 325-8162.  
**Watch**, men's, Juvenia auto. w/date & expansion band, \$65. Marina del Rey, 823-2655.  
**Duplex**, El Porto, lge. 2-bdrm., unfurn., 1-bdrm. furn., 1/2 block to ocean, beam ceilings, bltins, new cpts., dps. & paint, \$40,950. Redondo Bch., 375-7130.  
**Floor Scrubber-Waxer**, Kenmore, scrubbing brushes, buffing pads, carpet cleaning attachment, \$30. San Pedro, 833-5594.  
**Engine**, Model A Ford, 28 volt powerplant, old forge, many other items, 50¢ to \$25. Manhattan Bch., 377-1075.  
**Archery Target**, 24" Sanders grass mat & metal stand, \$5. Torrance, 328-6662.

**For Sale**  
**House**, 5-bdrm., 3-car gar., 2 1/2 baths, view, 1 yr. old, over 2,400 sq. ft., 5 3/4% financing, in P.V., \$51,900. P.V. Pen., 377-7555.  
**Impala**, 4-dr. h/top, 1961, auto., p/s, p/b, r/h, air cond., new batt. & brakes, \$800. Torrance, 329-2926.  
**Doors**, 14 paneled, assorted sizes, \$1.50 ea. Gardena, 675-4993.  
**Wig**, dark brown, human hair, styled, \$25. Redondo Bch., 370-9037.  
**Dryer**, Kenmore, gas, \$125. Redondo Bch., 374-1124.  
**House**, 3-bdrm., custom built, in Inglewood, \$23,950. Inglewood, 671-6187.  
**Acreage**, 2 1/2 acres, near Willow Springs, on good road, \$17.50 dn. & \$17.50 mo., \$1,750. Torrance, 378-1026.  
**Greenhouse**, 9x15, in Granada Hills, \$100; w/evap. cooler, \$125. Hawthorne, 644-1934.  
**Superhawk**, 1965, many extras, \$450. Palmdale, 805-947-4782.  
**Hook Rug**, 9x12, oval, reversible, w/matching throw rug, \$50. P.V. Pen., 541-2065.  
**House**, 2-bdrm., 1 bath, on 50' x 50' lot, in Hawthorne, \$15,000. Inglewood, 378-6325.  
**Home**, plus investment, modern duplex, 2-bdrm. each unit, cpts., bltins, sprinklers, fenced yds., South Bay location, \$31,500. Fullerton, 714-871-1406.  
**Encyclopaedia Britannica**, 24-vol. set, plus year books for 1960-67, \$125. San Pedro, 831-6567.  
**Mercedes**, 1965 220S, p/b, new tires, \$2,995. Manhattan Bch., 376-6873.  
**Home**, 2-bdrm., 1 bath, water softener, Dishmaster, cpts., new dps., in Hawthorne, \$23,500. Torrance, 328-8885.  
**Skis**, 210 cm, Head, competition Downhill, '66 model, Marker toe & turntable, \$120. Long Bch., 439-6643.  
**Wanted to Buy**  
**Band Saw**, 18" to 24". Downey, 633-6082. B  
**China Cabinet**, old or antique. Gardena, DA 9-6039. B  
**Camera**, twin lens reflex. P.V., Pen., 377-4623. B  
**Outdoor Furniture**, wrought iron, or aluminum in good condition. Manhattan Bch., 376-4677.  
**Chest-of-drawers**, suitable for boy's bedroom, must be in good condition. Inglewood, 755-2502. B  
**Music Typewriter** or 1 w/removable keys. Long Bch., 556-3691. B  
**El Camino**, 1967, 327 or 396 eng., preferably 4-spd., p/s, air cond. Anaheim, 714-871-4850. B  
**French Horn**, dble. key, for young student, reasonably priced. Torrance, 835-6710. B  
**For Trade**  
**Duplex**, 2 1-bdrm., furn., disposals, dble. gar. on wide, paved alley, very low maint. req'd., small lot, low taxes, trade up for units in Hawthorne or Inglewood. L.A., EX 8-5019. C  
**Movie Projector**, 8mm, w/reverse, to handle 400' roll of film, trade for Pentron President stereo tape recorder, 4-track, record & playback feature, 2 mikes & tapes. Hermosa Bch., 374-2135. C  
**Free (To Be Given Away)**  
**Rabbits**, 2, same gender, lge. cage. Torrance, 834-0309. D  
**Dog**, male, 6 yrs. old, poodle-type, to good home, preferably w/young children. Rolling Hills Ests., 375-7038. D  
**Rentals Offered**  
**Apt**, deluxe, 3-bdrm., 2 baths, cpts. & dps., bltins, fireplace, closed gar., pvt. deck, near Northrop & schools, \$180. Hawthorne, OS 5-7938. E  
**Apt**, 3-bdrm., cpts., dps., fireplace, air cond., pvt. patio, eye-level oven, infant O.K., no pets, \$135. Anaheim, 714-528-4553. E  
**House Trailer**, space included, near Nortronics & Norair Hawthorne, suitable for 1 or 2 adults, \$15 wk. Inglewood, 677-6712. E  
**Pent House**, lge. 1-bdrm., cpts., fireplace, sun deck, pvt. gar., walk to Northrop, couple only, no pets, utilities pd., \$145 mo. Hawthorne, 676-0210. E  
**Apt**, 1-bdrm., unfurn., patio, gar., laundry room, adults only, \$85 mo. Gardena, DA 9-9195. E  
**Apt**, 2-bdrm., close to Northrop, cpts., dps., disposal, redecorated, \$115. Redondo Bch., FR 9-9786. E  
**Apt**, 1-bdrm., furn., all bltins., pvt. deck, lge. pool, sub. parking, near Northrop, \$150. Lawndale, 679-2117, 670-6084.  
**Apt**, deluxe, 2-bdrm., downstairs, unfurn., cpts., dps., bltins, lge. pool, closed gar., near El Camino, adults, \$125. Torrance, 324-8373. E  
**Garage**, store boat, books or bric-a-brac, has raised cabinets, King Harbor area, \$15 mo. Redondo Bch., 376-9608. E  
**Vacation Cabins**, Lake Gregory & Crestline, sleep 6, make reservations now, \$25 w/ends; \$60 wk. Venice, EX 1-2040. E  
**House**, 3-bdrm., Lancaster, for lease, 2-story, in College Terrace Ests., family rm., bltin d/washer, dual fireplace, ref. cooling, underground sprinklers, \$200 mo. Torrance, 805-943-5348, 320-0045. E  
**Rentals Wanted**  
**House**, 2-bdrm. w/garage, fenced, in or close to Torrance, Lawndale, Lomita or Hawthorne, \$100 or less. Torrance, 328-5968. F  
**Bachelor** wanted to share apt. or house w/ same in Inglewood or Hawthorne area. Box 2006. F

**Rides and Riders**  
**Rides Wanted**  
**7 a.m. — 3:42 p.m.**  
**West San Fernando Valley**, Chatsworth. J. Rizzotti, Norair, ext. 2033.  
**Hewes & Chapman**, Orange. Route: Hewes to Katella, Newport Fwy. to Garden Grove Fwy. to Hester Ave. to Orangewood Ave. to Beach Blvd. to Garden Grove Fwy. to San Diego Fwy. to Harbor Fwy. to Plants 1, 2 & 3. Larry Slininger, Norair, exts. 2484, 2485.  
**Pacific Coast Hwy. & Crenshaw Blvd.**, Torrance. M. Wilson, Norair, ext. 2905, 326-8037.  
**7:24 a.m. — 4:06 p.m.**  
**Need** a ride after 4:06 shift to Plant I from Mariposa. Tom Henrich, Mariposa, ext. 4040, 835-9070.  
**7:30 a.m. — 4:15 p.m.**  
**Brookhurst & Ball**, Anaheim. F. W. Sturgeon, Norair, ext. 2401, 714-776-7215.  
**8 a.m. — 4:45 p.m.**  
**Ashton & Manning**, Westwood. C. Alper, Norair, ext. 1034, 372-8325.  
**Florence & Otis**, Bell. Jodee Edwards, Norair, ext. 2887, 771-1888.  
**Cerise & 139**, Hawthorne. Linda Chamberlain, Nort. Haw., ext. 301, 679-2319.  
**Tampa & Victory**, Reseda. Can meet at freeway. Bill Buffington, Norair, ext. 2335, 344-8896.  
**Mar Vista St. & Painter Ave.**, Whittier. C. Rosenkranz, Norair, ext. 1022, 696-3467.  
**Rides Offered**  
**7 a.m. — 3:42 p.m.**  
**Hewes & Chapman**, Orange. Route: Hewes to Katella, Newport Fwy. to Garden Grove Fwy. to Hester Ave. to Orangewood Ave. to Beach Blvd. to Garden Grove Fwy. to San Diego Fwy. to Harbor Fwy. to Plants 1, 2 & 3. Larry Slininger, Norair, exts. 2484, 2485.  
**7:30 a.m. — 4:15 p.m.**  
**Brookhurst & Ball**, Anaheim. F. W. Sturgeon, Norair, ext. 2401, 714-776-7215.  
**8 a.m. — 4:45 p.m.**  
**Tampa & Victory**, Reseda. Can meet at freeway. Bill Buffington, Norair, ext. 2335, 344-8896.  
**Mar Vista St. & Painter Ave.**, Whittier. C. Rosenkranz, Norair, ext. 1022, 696-3467.  
**Rentals Wanted**  
**House or Apt**, 2-bdrm., furn. or unfurn., for mother & 3 children, preferably close to Northrop Plant I or Hawthorne area, needed by Nov. 1, from \$80 to \$100. Burbank, 845-1651. F  
**Lost**  
**Ring**, Pius X Girl's High School, gold w/black stone, \$5 reward. Lynwood, NE 8-5580.  
**Sunglasses**, Sept. 25, pair of prescription, lost somewhere between Engineering Building & 747 Planning area in Tooling Building. Long Bch., 428-1817. J  
**Found**  
**Glasses**, pr. bifocal, on Slauson, case bears Dr. Blum's name. L.A., 293-5321. K  
**Personals**  
**Sincere** thanks to all our friends who so thoughtfully & graciously expressed their sympathy in our recent bereavement. JOHN & JERRY STETTLER. L  
**My family** & I wish to express our heartfelt thanks to our many Norair friends for their kind acts & condolences offered at the death of my father, Adrian Davis. RALPH DAVIS. L  
**Words** cannot express my heartfelt appreciation for the wonderful gifts & high honor given me upon my retirement. Thanks to all my friends who made my many years at Northrop such happy ones. PEGGY PARK. L  
**I wish** to express my deepest appreciation to all my friends & co-workers at Norair & Nortronics Anaheim for their kind thoughts & help during my hour of need at the loss of my husband, William F. Burgart. BERNICE H. BURGART. L  
**Dachshund**, miniature, black & tan, male, AKC & pedigree, will stud for pup. AKC reg. only. L.A., 837-4961. L  
**Men**, young, desire apt. to manage, have college degrees, business & engineering backgrounds, maintenance experience. Hawthorne, 676-7013. L  
**I would like** to express my warm thanks & appreciation to the co-workers & friends in Deep Submergence for thinking of me during my recent illness. JEAN. L  
**Flying** to Strawberry Valley, Utah via Las Vegas for weekend; can take 4 more persons, share expenses to either place. Box 2007. L  
**For Sale or Trade**  
**Accordion**, 120-bass, contelo make, \$175 or trade for stereo or anything of equal value. Gardena, 329-9484. M  
**Ford**, 1965 Fairlane 500 h/top, fact. air, p/s, \$1,775 or trade for TR-4, 1963 roadster. Harbor City, 534-1394. M  
**Bar-B-Q motor** & attachment, \$8 or trade for set of dumbbells. Lawndale, 371-5123. M  
**Falcon**, 1962 Ranchero, new eng. & trans., \$800 or trade for VW of equal value. Hawthorne, 679-9375. M  
**Ford**, 1959 2-dr. Galaxie, new interior & brakes, \$300 or trade for Ford or Chev. pickup truck of same value. So. Gate, 635-2602. M  
**Ironer**, Mont. Ward, auto., 9 fabric settings, used very little, \$40 or will trade for wall heater, gas, for den. Long Bch., 423-1363. M



## Richardson Elected NORAIID Chairman

John Richardson, formerly of Nortronics and now of Norair Industrial Relations, has been re-elected president and elevated to the post of chairman of the board of directors of NORAIID, Inc., Northrop Corporation's in-plant charity organization.

Selection of Mr. Richardson, other officers, board members

and committee members came at the annual NORAIID, Inc., meeting held September 21.

At that time it was announced that Northrop employees in the Corporate office, Norair and Nortronics Divisions have given over \$300,000 in the past fiscal year to support charitable organizations and functions. This is only the second year since NORAIID, Inc. was created in 1955 that employees have topped \$300,000 in annual donations through payroll deductions. Since 1955 Northrop employees have given in excess of \$2.8 million to be used in supporting local and national charities.

Joining the board of directors of NORAIID, Inc. for the coming year are Ward Dennis of the Corporate office; R. M. Cooper of Norair; and R. L. Gibney of Nortronics. Holdover directors are L. L. Balsam of Nortronics; C. C. Cilley of the Corporate office; and Mr. Richardson, Paul Crews, Don Grothe, J. D. Matthews and Ben Trump of Norair.

Marie Tully, vice president and secretary, and Ernie Boren, treasurer, were other officers named. In addition, Rudy Rivero was appointed accountant and Mrs. Tully was renamed NORAIID administrator.

Also returning for another year of voluntary service are members of the Facilities Committees.

Comprising the NORAIID committee for Nortronics Anaheim are Harry Belcher, chairman; William Carey, Carl Jensen and Sally Moore.

Harry Clark serves as chairman of the expanded Nortronics Hawthorne - Palos Verdes committee that includes as members Roland Gagon, Frank Morehouse, Jean Schaefer and Donald Weaver.

The Huntsville, Alabama, NORAIID committee is composed of H. L. Cox, chairman; Fred Hertel and Marlin Sloan.

## Management Club Lists Speakers

Three key Lockheed Aircraft Corporation executives will be guest speakers at the Northrop Nortronics Management Club meeting October 18 at the Long Beach Elks Club.

Each speaker represents a major Lockheed program.

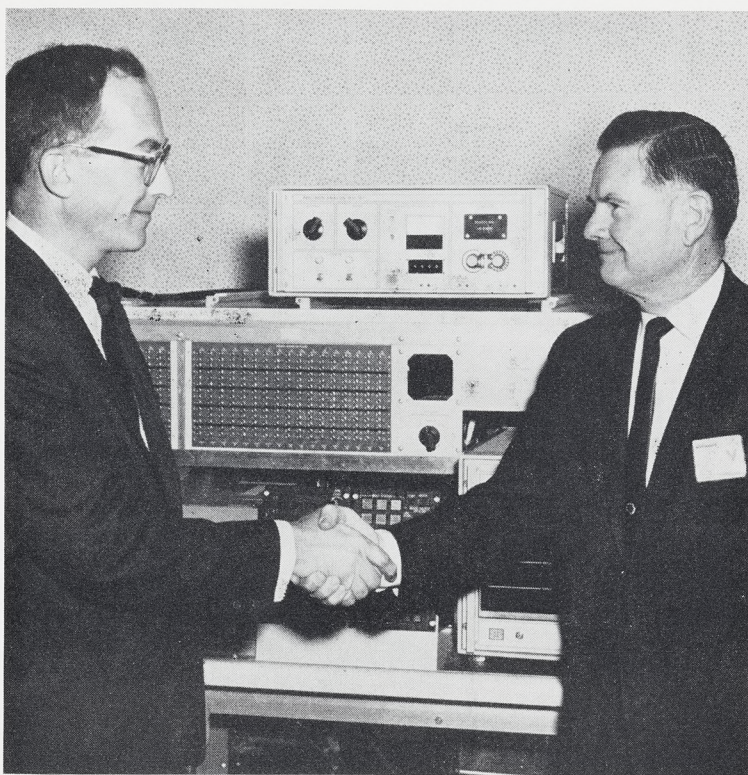
Tom Barry, club president, indicated the meeting will get under way at 5:30 p.m. with a social hour. Dinner will be at 6:30 p.m.

Leonard McKenna is manager of Procurement for Lockheed Missiles and Space Company, Sunnyvale, California.

John McCarthy is director of Materiel and C-5A Subcontracts manager at Lockheed-Georgia Company, Marietta, Georgia.

Nicholas Vytlicil, jr., serves as manager of Deep Submergence Rescue Vehicle Systems Engineering at the Sunnyvale facility.

Nortronics currently works with Lockheed in producing automated test equipment for the Polaris/Poseidon Programs as well as the complete inertial Doppler navigation system for the Air Force C-5A transport. Nortronics is the prime management and engineering support contractor for the Deep Submergence Systems Program for which Lockheed is building the Deep Submergence Rescue Vehicle.



*NEW RESPONSIBILITIES in managing subcontracts Northrop Nortronics holds with Lockheed for the C-5 Galaxy program have been assigned to J. B. (Jack) McChesney (right). Mr. McChesney asked for cooperation in carrying out "the big job ahead." Pledging that cooperation on behalf of Northrop is Lloyd Balsam, Nortronics' C-5 program manager.*

## McChesney's Duties on C-5 Expanded

As a result of recent changes in emphasis in the Lockheed purchasing arrangement for the C-5 Galaxy IDNE (Inertial Doppler Navigation Equipment) program at Nortronics Hawthorne, J. B. (Jack) McChesney, a senior Lockheed management representative, has acquired even greater responsibilities than he previously had.

In addition to his previous function of providing a ready avenue between the two companies for the exchange of management views, he is now directly responsible for the management of the Nortronics subcontracts with Lockheed for the C-5 IDNE System, Guidance Subsystem Integration and the MADAR Computer. This involves negotiating the very extensive dollars involved, seeing that the contract is lived up to, and that the systems "get there."

Mr. McChesney's role has been transformed from a representative who observes from the sidelines with a watchful eye, to that of one who, in addition, "holds the reins."

In a word, it is Mr. McChesney, as Lockheed's representative, whom Nortronics must satisfy with its contractual performance on the C-5 program.

Mr. McChesney has been temporarily assigned to the Lockheed-Georgia Company from the Lockheed Corporate offices in Burbank, where he was manager of the Central Procurement Agency. Before that, he was general purchasing agent at the Lockheed Missiles and Space Company in Sunnyvale.

Mr. McChesney, who has been with Lockheed for 27 years, said the Nortronics personnel have been extremely cordial and cooperative.

Mr. McChesney is a native of California, as was his father. He is a graduate of Occidental College. He and his wife live in La Canada. They have two adult children and are grandparents of two.

## NORTRONICS' 1051

### 'Le Computer du Paris'

"Allo, je suis votre ami le donneur du jeu 'vingt et un'—D'un a quatre personnes peuvent jouer—Coupez les cartes."

Translation? "Hello, I am your friendly blackjack dealer. The game is played by one to four players. Cut the cards."

A Parisian dealer at Las Vegas? No. A gaming table on the Riviera? No.

The Nortronics 1051 computer at this year's Paris Air Show? Yes.

For demonstration purposes, this versatile computer, similar to the Airborne Digital Computer used as part of the Nortronics C-5 package, was programmed to play blackjack in French at the 1967 Paris Air Show.

Leroy Kaufold, director of the Nortronics Navigation department's Product Engineering section, together with Ed Klein, chief of the Computer Development group, took the computer from Hawthorne to Paris and set it up there.

Mr. Kaufold said this was the first "dynamic demonstration" of an airborne digital computer ever presented since the first Paris Air Show was held more than 22 years ago.

The demonstration was held by Nortronics under the auspices of SINTRA, a French company which is negotiating for a licensing agreement with Nortronics to

build the computer for sale in Europe.

Also on display at the show were the Nortronics NORVIPS and the VIGICON.

The computer operated approximately 10 hours a day every day during the show without, in Mr. Kaufold's words, "ever missing a beat."

### Basketball League Planned at Anaheim

Plans for an in-plant basketball league at Nortronics Anaheim will be formulated, if sufficient interest is shown, NRC Commissioner Don Ross reports.

Six teams are required for a league with action on the evening of the week selected by participants. Contact Mr. Ross at ext. 431 or NRC at ext. 244 to enter teams or individuals.

### NRC Obtains Tickets For 'Millie' Showing

Nortronics Anaheim's NRC has made arrangements to obtain discount tickets for the October 14 (5 p.m.) and the October 15 (8:30 p.m.) showing of "Thoroughly Modern Millie" starring Julie Andrews.

Ticket requests, to be sent directly to the Warner Hollywood Theatre, may be obtained from Personnel Activities outlets.

### Coin Club To Help In Hawthorne Show

Northrop Coin Club members are once again planning an active part in the fourth annual Hawthorne Coin Show slated for the Hawthorne Memorial Center, October 27 through 29.

This event is open from 10 a.m. to 10 p.m. on October 27 and 28 and from 10 a.m. to 6 p.m. October 29. It features displays of outstanding coin collections, plus other interesting features.

### Rhumba, Fox Trot Included in Class

You can learn the rhumba at 8 p.m. or the bronze foxtrot at 9:15 p.m. each Thursday beginning October 19 in a new series of NRC-sponsored dance classes at NRC Clubhouse, Hawthorne.

The price is \$7.50 per person or \$10 per couple for one dance or \$10 per person for both. No advance registration is necessary, but admittance closes after the first three sessions.

## SNAKE IN THE GRASS

### Big Rattler 'Dispatched'

Good test sites have a lot in common. They are generally located well off the beaten path, far removed from populated areas and in well-protected and secluded canyons.

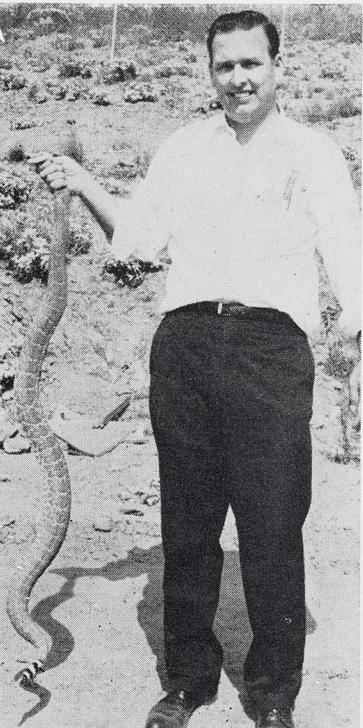
The very attributes that make them good test sites also encourage the presence of wildlife.

Over the years Northrop Nortronics test crews have shared a live-and-let-live existence with deer, coyotes, rabbits, ground squirrels, skunks and assorted varmints of all types. And they have dispatched their share of reptiles that become too friendly. They are always on the alert for the latter.

Last month B. W. (Bud) Morris dispatched what might well be a "granddaddy" diamond-back rattler at a site near Riverside. It weighed 26 pounds, stretched 60 inches in length and had 13 rattles. Oddly enough, finding him was not a surprise to the test crew Mr. Morris was working with at the time.

"We had seen his tracks for some time. They were as broad as a motor bike tire tracks. We knew he had to be a big one,"

Mr. Morris said. "Now everyone is alert for another of about the same size, since they seem to travel in pairs."



*FORMER REPTILE—B. W. Morris of Nortronics displays a 26-pound diamond-back rattlesnake he killed recently.*

## PLEASE DON'T KICK THE MACHINE

Have you lost money in a vending machine located in-plant at a Northrop facility?

You can get a refund at any time by contacting Personnel Activities. Report the amount and the number of the machine involved.

Here are a few tips that may help you avoid future losses.

Read the operating instructions on each machine. Select the proper handle or button. Be sure a handle is not pulled out and jammed. A lighted sign indicates when the machine can not make change. Carefully check the coin you are about to insert. Coins with nicks and cuts will

jam a machine, but will be returned when you use the coin return lever. Foreign coins and slugs usually contain steel and will be trapped by a magnet inside the machine. Jerking or banging on a machine does not make it operate and often causes serious damage.

Willful damage of vending machines is serious. It causes inconvenience to other employees who wish to use the machine. And it affects revenues and all employees, since profits from these machines are used to support Northrop Recreation Club activities open to all employees and their families.



# NORTHROP NEWS

NORTHROP NORTRONICS

Published biweekly by Northrop Corporation, Beverly Hills, California

Vol. 25, No. 21

October 25, 1967



AT THE MANAGEMENT MEETING—Nortronics officials met with Lockheed-Georgia representatives last week at a Nortronics Management Club dinner. Discussing the C-5A program here are (from left) Ross Miller, Nortronics vice president and Navigation department man-

ager; Frederick Stevens, Corporate vice president and Nortronics general manager; Lee Poore, Lockheed-Georgia vice president and C-5A program manager; and Lloyd Balsam, Nortronics C-5A program manager.

## Lockheed Honored By Management Club

A successful business relationship between Northrop Corporation and the Lockheed Aircraft Corporation was highlighted at last week's Northrop Management Club meeting.

The meeting, designated "Lockheed Night," featured several Lockheed executives who attended as guests of the Management Club and spoke of their major programs in which Nortronics plays major roles.

Frederick Stevens, Corporate vice president and Division general manager, said that Nortronics' "relationship with Lockheed through the years has been a worthwhile and enjoyable one."

"We have always found Lockheed to be tough negotiators and demanding task masters," Mr. Stevens said, "but most important we have found them fair, reasonable, understanding and intelligent in all of our dealings."

Nortrop Nortronics' relationship with Lockheed stems from 1959 when work began on the missile test readiness equipment (MTRE) for the Polaris-armed submarines. The work with Lockheed is continuing for similar equipment for the Poseidon missile. Nortronics also is producing the inertial navigation system for the Lockheed C-5A, and the Precision Products Department has produced gyroscopes for Lockheed.

The three featured Lockheed speakers were:

Len McKenna, Lockheed Missiles and Space Company, Missile Systems Division, procurement manager; John McCarthy, Lockheed-Georgia Company, director of material and manager of C-5 program subcontracts; and Nick Vytlačil, jr., Lockheed Missiles and Space Company, Research

and Development Division, manager of the Deep Submergence Rescue Vehicle Systems Engineering.

Mr. McKenna, in addition to explaining the Lockheed-Nortrop Nortronics relationship on the Polaris/Poseidon program, also presented a special U.S. Navy award to Northrop.

Ralph Dix, Nortronics Polaris/Poseidon program manager, and Frank Lynch, Division vice president and manager of the Anaheim department, accepted the Navy's "41 For Freedom" award from Mr. McKenna. The award is presented to fleet ballistic missile contractors who have demonstrated outstanding performance during the massive program.

Mr. McCarthy of Lockheed-Georgia reviewed the gigantic C-5A program that is under way in Marietta, Georgia, and the impact it will have on the United States.

"We at Lockheed-Georgia know that the Nortronics Navigation department will give us a great navigation system and we're going to have a great airplane to put it in," he said.

Mr. Vytlačil reviewed the rescue vehicle being produced by Lockheed for DSSP, and showed how it will be used to rescue survivors from distressed submarines.

Other Northrop officials in attendance were: Richard Nolan, senior vice president, Manufacturing and Administration; Ross Miller, Division vice president and manager, Navigation department; V.W. Howard, Division vice president and manager, Systems Laboratories; Dr. William Parker, Marketing manager, Lloyd Balsam, Nortronics C-5 (See MANAGEMENT, page 4)

## NORAID CAMPAIGN

### Charity Drive Scheduled

Next week Northrop Corporation personnel unite to support and promote AID-NORAID, their all-inclusive charity organization.

This is the annual campaign to encourage non-members to join AID-NORAID and the time to renew special designations.

It begins October 30 and closes November 3.

Taking part are Northrop employees at the Corporate office, Norair and Nortronics (West Coast) Divisions.

As a chapter of AID-United Givers, Northrop employees support all major health and welfare organizations directly in the area where they live. Through NOR-

AID they help fellow employees in their time of need.

Donations are utilized to afford the most thorough support of health and welfare agencies possible, plus assistance to fellow Northrop employees.

Those who have supported AID-NORAID through the years recognize it eliminates the need for multiple in-plant drives for many causes. They know one pledge each year takes care of the family's community obligations in the best possible way. And they feel the payroll deduction plan is systematic and easy to use.

Since 1955, Northrop employees have given in excess of \$2.8 million to AID-NORAID. Of this, (See NORAID DRIVE, page 4)

## Awards Offered For Machinists

Northrop Nortronics urgently needs 55 skilled machinists to fill job openings in its West Coast facilities.

Present Nortronics personnel can perform a real service to the company and possibly earn \$100 by referring individuals qualified to fill these openings.

Fifty of the present openings are at Nortronics Anaheim, five at Nortronics Hawthorne. They cover a variety of machining skills. Most involve second shift work, although there are a few first shift positions.

Northrop's Referral Award Plan offers \$100 to the employee who is instrumental in helping fill these openings.

Details are available at any Nortronics Personnel office.

## Mr. Jones Reviews 747 Facilities at Nortronics

Northrop Nortronics' capability for producing aircraft stringers for the Boeing 747 continues to grow and expand with the arrival, installation and utilization of new equipment and facilities.

Early this month Northrop President Thomas V. Jones visited Anaheim for a personal look at the new facilities and general discussions with key personnel.

This was another of Mr. Jones' personal assessments of progress being made throughout Northrop toward meeting 747 Program objectives.

Donald D. Warner, Norair's 747 program manager, accompanied Mr. Jones on the visit.

Frank Lynch, Nortronics Anaheim manager; Jim Ricketts, deputy manager; Ray Schultz, director of Manufacturing-Materiel; and Grant Gunderson, chief of Production, participated in talks and the tour.

Nortronics Anaheim is using new and improved forming proc-

esses developed at Northrop in producing the stringers, the basic aircraft structural elements which run the length of the fuselage. Approximately 800 stringers will be used for each set of components comprising the 153-foot-long central fuselage Northrop is producing for the 747.

Production schedules call for delivery of the first fuselage sections to The Boeing Company's Everett Facility late in December.

Mr. Jones stressed the importance of meeting this schedule and called for the continued dedication of those involved in the program to meet these objectives.

"Never before have so many resources of the Northrop Corporation been brought to bear on getting a single program started as is the case with the Boeing 747," Mr. Jones said. "We've only started, and we have a long way to go."



STRINGER CAPABILITY REVIEW — Northrop President Thomas V. Jones holds a stringer similar to many that will be produced at Nortronics Anaheim for the 747 Program. Frank Lynch (right) and Jim Ricketts, manager

and deputy manager respectively at Anaheim, explain process. Looking on at left is Donald D. Warner, Norair's 747 program manager. Mr. Jones visited Anaheim as part of his continuing personal assessment of 747 work.



## Citizens Band Transceiver Introduced by Hallicrafters

A new 23-channel mobile transceiver for licensed Citizens Band users has been introduced by Hallicrafters Company, Northrop's subsidiary in Chicago.

The new transceiver (transmitter and receiver), designated CB-24, has 21 transistors, eight diodes and four thermistors. Other features which make the unit easy to operate even while in a moving vehicle include concentric volume and squelch controls, an automatically switched S-meter and RF-output indicator, an illuminated channel selector and a rocker-type public address-Citizens Band switch.

A special high-output audio stage cuts through road and motor noise, both of which often limit mobile reception clarity. The result is an increased receiving range.

Depressing the public address panel switch converts the audio stage into a mobile public address system, useful in many business, public safety and emergency communications applications.

## Air Force Men Begin Industrial Training Study

Four Air Force officers taking part in the Air Force Institute of Technology Education With Industry (EWI) Program have reported to Northrop Corporation for a 10-month assignment.

The officers are Captains James E. Drumgool, George W. Mickey and Carlos L. Naumann, and First Lieutenant Robert W. Stewart.

During their Northrop assignment the officers will meet with Northrop management in the Corporate office, Norair, Northrop and Ventura Divisions to study the industrial management aspects of research, development, manufacture and support of Air Force hardware.

Northrop's participation in the EWI program since the mid-1950's has "graduated" 24 officers.

The total EWI program this year has an enrollment of 138 officers who are assigned throughout industry in a variety of specialties including 83 in industrial management. Upon "graduation," 85 per cent of these officers will be assigned to the Air Force Systems Command, and 15 per cent to the Air Force Logistics Command and other major air commands.

List price of the new unit is \$199.95. An accessory power supply for operation from 110-115 volts a.c. costs \$34.95.

The CB-24's five-watt-input transmitter section delivers an average of 3.5 watts of output into a 52-ohm load. The unit's efficient Class B audio stage delivers 3 to 4 watts of output. Crystals are included for transmitting and receiving on all 23 Citizens Band channels.

A receiver AGC (Automatic Gain Control) circuit levels out wide variations in received signal strengths. Combined with the CB-24's automatic volume control circuit, this permits reception of strong signals which would often distort on earlier transceivers.

The unit may be purchased at all facilities by contacting Personnel Activities.

## H.L. Janssen Appointed to Salaries Post

Harold L. Janssen, former chief of Personnel Compensation and Training at Nortronics Anaheim, has been appointed Corporate director of Personnel Compensation.

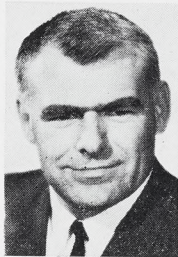
The announcement of his appointment was made by William Larrabee, Corporate vice president of Industrial Relations.

Mr. Janssen, who now reports to the vice president of Industrial Relations, is in charge of developing policies and programs designed to meet Northrop's objectives of providing wages, salaries and fringe benefits which compare favorably with others in the industry.

"In addition," Mr. Larrabee said, "Mr. Janssen will be concerned with the special problems associated with the relationship of position and performance to compensation."

Mr. Janssen is a graduate of the University of Iowa, with a bachelor's degree in economics and a master's degree in political science.

He has been with Northrop Corporation for more than 11 years.



Mr. Janssen



ROOM AT THE TOP—Mt. Whitney, tallest peak in the continental United States, was photographed by Norair's George Kern on a recent soaring flight from El Mirage to Bishop. Mr.

Kern, supervisor of Systems Reliability, completed the requirements for the gold badge of soaring with the 218-mile flight. The wing of his ship can be seen at left.



AFTER THE FLIGHT—George Kern smiles as he lifts the canopy from his sailplane following the flight. He is a director of the Southern California Soaring Association. His wife, Emily, is an administrative secretary in the Northrop Corporate Laboratories.

## Underseas Gets Japan Cable Project

Ever wonder if you could make a telephone call all the way around the world?

Not quite. Starting in Los Angeles, you could complete a call via land facilities and ocean cable across the United States, eastward across Europe and Russia, ending at the Siberian coast.

Only a 450-mile gap between Siberia and Japan eliminates the possibility of an around-the-world call, and this span will be crossed by 1969, through the work of U.S. Underseas Cable Corporation, an affiliate of Northrop Corporation.

U.S. Underseas Cable has been named prime contractor for a \$6 million project, known as the Japan Sea Submarine Cable Project, which will join Naoetsu, Japan, with Nakhodka, Siberia.

As prime contractor, Underseas will provide project engineering, management and coordination for the entire effort.

Cable laying from the Siberian side is scheduled first, and a completion date of late in 1968 has been set. Land cable installation will be done at the same time. Then the installation will be completed by installing the shore end at Naoetsu, laying the deep sea cable and then rejoining the previously laid cable.

## New Tax in Effect

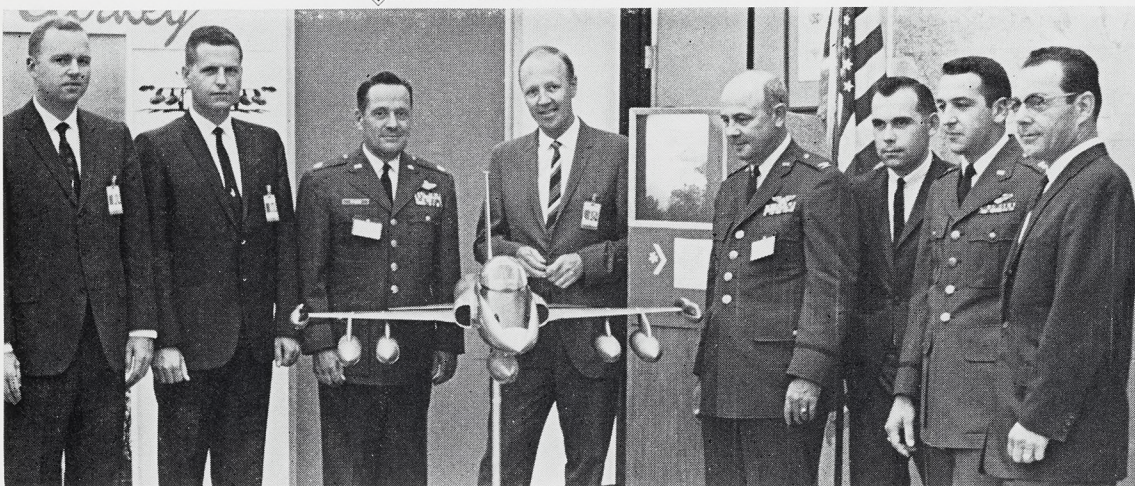
Northrop employees are reminded that new tax laws require California residents to pay 50 per cent of their estimated 1967 state income tax by October 31 if their California personal income tax for 1966 was \$200 or more.

Additional information is available from the California Franchise Tax Board.

## Time Change Nears

California returns to Pacific Standard Time over the coming weekend.

Time clocks will be set back one hour over the weekend and work shifts will begin one hour earlier Monday, October 30. Notices covering shifts working over the weekend have been posted at all facilities.



ANOTHER NORTHROP YEAR of supporting Air Force Institute of Technology Education With Industry was marked by this group recently. Norair's Gaylord Anderson is flanked by Lieutenant Colonel Frank S. Raggio, AFIT's chief of Professional Education, and Colonel Miles R. Palmer, director of AFIT's Civilian

Institutions Division. At right is Harry Blocher, Norair supervisor of Customer Training. Others are Air Force officers who will spend nine months of training at Northrop. They are (from left) First Lieutenant Robert Stewart and Captains Carlos L. Naumann, George W. Mickey and James E. Drumgool.



A LIGHTER MOMENT during the visit of Lieutenant General Mohamad Khatami (left), commanding general, Imperial Iranian Air Force, is shared with F. W. Lloyd, Northrop vice president and Norair general manager. General Khatami and party visited Corporate offices prior to calling at Norair for briefings and tour of the F-5/T-38 assembly area.



Classified

Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private businesses are not accepted. The Northrop News reserves the right to edit or omit ads. Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 62. Ads are limited to one item and one ad per person each issue. Deadline is noon Wednesday, one week before publication.

For Sale

Refrigerator, 6' Westinghouse, \$60. P.V. Pen., 377-1094. A

Falcon, 1962 3-spd., 6-cyl., good tires, \$475. Box 2101. A

Home, 2-story, 3-bdrm., 3 baths, fireplace, intercom sys., 2-car gar., 2,300 sq. ft., near Northrop, \$43,000. Hawthorne, 675-7581. A

Sloop, 35' Lion class, fully equipped, 4 yrs. old, all teak w/fiberglass decks, sleeps 6, R.D.F., ship-to-shore, TV, \$12,500. Torrance, 830-3792. A

End Tables, 2 maple, w/lamps, \$40. Harbor City, 325-3452. A

Chevrolet, 1957, V-8, 2-dr., p/b, p/s, \$300. Hawthorne, 676-4464. A

Pickup, Chevrolet, 1949, 1/2-ton, new paint & tires, recently o/hauled, \$260. Lakewood, 860-1807. A

Transmission Cooler, Hayden, \$25. Hawthorne, 644-2401 before 3 p.m. A

Helmet, for motorcycle, size 7 3/8, \$10. Inglewood, 674-8504. A

Station Wagon, 1961 Falcon, auto., r/h, elec. window, \$375. Sepulveda, 894-8490. A

Chevrolet, 1961 Impala, 6 cyl., r/h, p/s, new brakes, \$750. Torrance, 370-1639. A

Golf Clubs, matched irons, Wilson 2-9, matched woods, MacGregor 4, bag & golf cart, \$70. Inglewood, 676-8893. A

Units, 8 & single house, all 1-bdrm. on 66 x 300 lot, 1 mile from Northrop, \$15,000 dn., owner will carry loan to responsible party, \$70,000. Inglewood, 677-4388. A

Surfboard, 9' 9", yellow panels, custom made, used once, 1/2" redwood, \$60, others various prices. Inglewood, 679-8550. A

Corvette, 1966 convt., 327/350 h.p., posit., 4-spd., close-ratio trans., AM/FM radio, \$3,400. L.A., 755-0637. A

Volkswagen, 1963, new paint, tires, brakes, AM/FM radio, \$975. Woodland Hills, 340-3005. A

Drapes, cream color, 8' length, 5 sections, 32' over-all width, orig. cost \$300; \$75. Hawthorne, 675-9389. A

House, stucco, 3-bdrm., den, 2 full baths, cpts., covered patio, 2-car gar., block wall, sprinklers, \$21,990. Inglewood, 671-8401. A

Radio, KLH model 20 FM, walnut, still in orig. packing box, cost \$80; \$55. L.A., 477-8791. A

Vacuum Sweeper, Sears, lightweight, \$15. Inglewood, 672-5545. A

Pontiac, 1964 Bonneville, 2-dr., full power, \$1,550. Torrance, 373-1932. A

Honda, 305, 1966 Scrambler, low miles, \$475. Torrance, 328-5171. A

House, 3-bdrm., 1 1/2 baths, w/w cpts., nat'l. fpl., shutters, sprinklers, service porch, att. dble. gar., block wall fence, all appliances, walk to Northrop, G.I. or FHA, \$23,950. L.A., 754-8897. A

Yamaha, sport, 246 cc, 5,400 miles, \$560. Torrance, 375-0240. A

Freezer, Westinghouse, upright, self-defrosting, 65" tall, 30" wide, \$125. Inglewood, 676-3837. A

Lot, Salton City, 70 x 125, R-1 zone, \$5,100. La Mirada, 941-5527. A

Dining Room Set, mahogany, Duncan Phyfe, table w/1 12" fill, 6 chairs, \$50. L.A., 294-2975. A

Piano, spinet, full keyboard, mahogany, \$300. Inglewood, 672-1716. A

Bedroom Set, maple, 4 poster bed, box spring & mattress, dble. dresser & mirror, highboy chest & 2 night stands, \$200. Manhattan Bch., 372-0649. A

Falcon, 1963 sprint, 4-spd., V-8, new tires, \$1,175. San Pedro, 833-4198. A

Station Wagon, 1963 Ford Fairlane, r/h, auto., p/s, \$950. Simi, 805-526-6878. A

Volkswagen, 1600 square back Variant, 1966, dash rack, motor cover & extras, \$1,825. Redondo Bch., 672-7424. A

TV, 21" G.E., b & w, Early American cabinet, 3 yrs. old, \$95. Orange, 714-639-5107. A

Movie Camera, 16 mm Bolex w/3 lenses, case, 1500 ft. film, Ektachrome ASA 150, \$350. Manhattan Bch., 372-7994. A

Swimming Pool, 18' Doughboy, w/large filter, glass-lined heater & timer clock, \$300. L.A., 474-2025. A

Coffee Table, 2 end tables, set, maple finish, \$20. Torrance, 370-6734. A

Chevrolet, 1958, 4-dr., standard 6-cyl., 4 new tires, orig. owner, \$325. L.A., 663-1600. A

Alfa Romeo, 1962 Giulietta, new top & tires, \$1,000. Los Alamitos, 596-2844. A

Dinette Set, maple, 5 chairs w/beige padded seats, \$55. Torrance, 370-6734. A

TV, portable, 19" Silvertone, VHF & UHF, \$45. Marina del Rey, 399-5383 before 3 p.m. A

Mustang, 1966, 12,000 miles, 6-cyl., 3-spd. trans., \$1,750. Torrance, 327-4052. A

For Sale

Mobile Home, 1963 Kit Trojan, 55 x 10 front kitch., expan. liv. room, d/washer, bltins, Salem ash paneling, 2-bdrm., air cooler, awnings, unfurn. \$4,500. Torrance, 835-7661. A

BSA, 1966 Lightning Rocket, 650 cc, \$850. Hawthorne, 676-7886. A

Pickup, 1962 3/4-ton, high torque 6, 8' bed, hvy. duty throughout, 4-spd. trans., \$1,100. Torrance, 373-2354. A

Amplifiers, Espey model 501, 25-watt output, push-pull parallel 6V6's, \$15 ea. Gardena, 324-7097. A

Drum Set, 4-pc. Crown, blue sparkle, \$145. Van Nuys, 781-3854. A

Chevrolet, 1967 Camaro R.S., 2-dr. black vinyl h/top, p/s, 4-spd. trans., wide oval tires, under 4,000 miles, \$450 & take over pymts., \$2,300 approx. bal. Hawthorne, 676-1454. A

Cadillac, 1966 sedan De Ville h/top, new tires, \$4,800. Hawthorne, 644-2489. A

Surfboard, 9' 6", Gordon & Smith, Mike Hyenson model, w/wet suit, \$100. Rolling Hills Ests., 375-6397. A

Karmann Ghia, 1961, recently o/hauled, \$1,200. Manhattan Bch., 372-7075. A

Home, 3-bdrm., in Hollypark, den & paneled family rm., stone fireplace, 2 baths, h/wood floors, patio w/brick flooring, cement block fence, many extras, \$28,300. Gardena, 321-6973. A

Headboard, walnut, 6' 7" w/2 twin size swing-out metal frames, \$10. Redondo Bch., 375-2220. A

Grille, lights & fiberglass body front section, for Shelby GT, incl. bumper, will fit 1967 or '68 Mustang, \$100. Bev. Hills, 273-0488. A

House, 3-bdrm., 1 1/4 bath, cpts., bltins, dps., air cond., 6' block wall fencing, 600 sq. ft. patio, sprinklers, 7 yrs. old, 15 min. to Nort. Anaheim, \$27,500. La Mirada, 941-7174. A

Chevrolet, 1958, 348 eng., floor shift, new paint, \$325. Hermosa Bch., 376-5905. A

Sailboat, 24' Star class day sailer, \$1,195. Torrance, 326-8009, 534-0610. A

Table & 2 couches, 1 slides half way under table, plus 2 bolsters, can be used as beds, 2 yrs. old, \$125. Inglewood, 673-1200. A

Pontiac, 1967 Firebird, stick & disc brakes, fully equipped, \$2,850. Hawthorne, 676-8738. A

Tools, British Whitworth, 6 sockets, 4 open-end wrenches, Craftsman, \$5. Redondo Bch., 379-9670. A

Shotgun, Browning over & under, 12 gauge, gold engraving, \$295. Rossmore, 431-7696. A

Townhouse, 4-bdrm., 2 1/2 baths, all elec. kitchen, inc. washer & dryer, cpts., dps., pool, clubhouse, tennis ct., patio & 2 1/4-car gar., \$1,500 equity & assume 5 1/4% G.I. loan, \$22,700. Garden Grove, 714-530-4221. A

Corvair, 1964 Monza, r/h, auto., b/seats, \$925. Torrance, 378-1983. A

Camper, 1963 Turnpike for 8' pickup, butane stove, ice box, water tank, foam mattress, cabinets, \$350. Santa Monica, 394-8641. A

House, 3-bdrm., 1 1/4 bath, walk to Norair, in Gardena, cpts., elec. range, \$23,950. La Palma, 714-521-5483. A

Bunk Beds, convert to twin beds, Salem maple, spool design, \$25. L.A., 755-1925. A

Living Room Set, couch & 2 lge. chairs, gold w/orange flakes, \$95. Torrance, 329-6748. A

Station Wagon, 1963 Chevrolet, 9-pass. Impala, p/s, V-8, Powerglide, r/h, \$875. Redondo Bch., 376-9895. A

Home, 2-bdrm., Spanish stucco, dining rm. or convt. den, lge. kitchen, service area, h/wood floors, detached dble. gar., 50 x 150 R-3 lot, near Norair, \$25,950. L.A., 755-5084. A

Cad-Allard, Model K-3, full road equip., \$1,500. Mar Vista, 398-5019. A

House, 2-bdrm. & den, 1 1/2 bath, massive fireplace, cpts., dps., dishwasher, bltins, 10% dn., \$30,000. Inglewood, 329-2174. A

TV Cabinet, maple, between 3 1/2 to 4 ft. high, \$25. Manhattan Bch., 545-1662. A

Shotgun, 12-gauge, 1966 model, 1100 Remington, 2 3/4 Magnum, modified choke, \$120. Torrance, 329-5986. A

Go-Cart, child's, chain driven w/foot pedals, no motor, \$8. Inglewood, 378-6325. A

Acreage, 2 1/2 acres, Lancaster, residential zoned, \$1,500 dn., \$50 mo., \$5,500. Redondo Bch., 375-7130. A

Wheelbarrow, hvy. duty, Sears Craftsman, used little, \$10. Los Alamitos, 596-0521. A

House, near Del Amo, 3-bdrm., 1 1/4 bath, forced air heat, h/wood floors, bltin range & oven, 2-car gar. & 20 x 20 workroom, \$25,750. P.V. Pen., 377-4943. A

Coin Collection, Lincoln, Buffalo, Early U.S., many uncirculated, \$500. Rolling Hills Ests., 371-2531. A

Pups, AKC, Yorkshire terrier, 8 wks. old, male, \$125. Gardena, 755-3030. A

Honda, 1966, S-90, \$150. Torrance, 371-1439. A

Bird Cage, lge., 4' x 16" wide, round w/ 7 1/2" stand, inc. perches, food trays, water, feeders, \$20. Hawthorne, 675-3525. A

Meat Slicing Machine, elec. \$10. L.A., 757-3595. A

Pool Table, 4' x 8', complete, \$65. Torrance, 328-5840. A

Gun, 12 ga. Winchester pump, model 12, \$95. Hollywood, 463-5337, 464-2837. A

House, 3-bdrm., 1 1/2 baths, fireplace, cpts., disposal, fenced yard, 2-car gar., \$3,000 dn., \$23,900. Torrance, 379-9786. A

House, 2-bdrm., den, lge. living rm., cpts., fireplace, 2 blocks from beach, 25 min. from Norair, \$37,500. Playa del Rey, 398-0012. A

For Sale

Jeep Top, CJ5 full cab, all steel w/roll-up windows, \$165. Los Alamitos, 431-0845. A

Bed, dble. w/bookcase headboard, \$30. Anaheim, 714-635-1686. A

Encyclopedia Americana, 30 vols., spec. water resistant covers, maple bookcase, orig. cost \$499.95; \$300. Manhattan Bch., 545-1676. A

Volkswagen, 1963 Westphalia camper-bus, Porsche eng., attach. tent, top rack, \$1,475. Gardena, 323-1374. A

Apt. House, 21-unit, near Northrop, has outstanding potential, offered at less than 7 times gross to qualified buyer, 85% may be long-term financed, \$215,000. Panorama City, 892-6622. A

Racing Bicycle, 10-spd. Legnano, Campagnolo equipment, Pirelli tires, \$60. Manhattan Bch., 376-5139. A

Cargo Trailer, wood, \$60. Lawndale, 676-6726. A

Exercycle, used twice, \$75. Huntington Bch., 714-847-4871. A

Home, 3-bdrm., 1 1/4 bath, family rm., bltins, cpts., landscaped, 9 minutes to Nortronics Anaheim, \$24,500. Anaheim, 714-776-1196. A

Guitar, elec., Magnetone Zephyr, 2 pick-up, 6 mos. old, \$110. Torrance, 329-6223. A

Trailer, located at Mammoth, Kit, 1/2 bath, 2-bdrm., \$600. Manhattan Bch., 545-6114. A

Profiles, complete set, aircraft, nos. 1 thru 168, \$45. Huntington Bch., 714-847-2648. A

Acreage, 2 1/2 acres, near Willow Springs, on good road, \$17,50 dn. & \$17.50 mo., \$1,750. Torrance, 378-1026. A

Corvair, Corsa convt., Pirellis, 4-spd., 140 h.p., 24,000 mi., FM, \$1,650. Santa Monica, 379-3290. A

Station Wagon, 1961 Ford Country Squire, 390 h.p. eng., factory air, auto. trans., \$800. Arcadia, 445-3009. A

Bedroom Set, dresser, chest, night stands, headboard, blonde, \$45. Torrance, 370-6896. A

Triumph, 1966 MK2 Spitfire, convertible & h/top, \$1,995. Manhattan Bch., 379-1773. A

Porsche, 1600, 1959, good tires, silver w/ black interior, \$1,600. L.A., 657-6964. A

Chevrolet, 1965 Impala S.S., full power, air cond., new tires & batt., 2,900 miles, many extras, \$2,095. Long Bch., 634-6750. A

Shaver, Sunbeam Rollmaster, elec., needs cord, \$8. Gardena, 329-9484. A

Fall, dark brown, 20" long, 100% Indonesian hair, not styled, \$40. Redondo Bch., 371-5163. A

House, 2-bdrm., 2 baths, 3 1/2 ton air cond., elec. bltins, dps., cpts., in Palm Desert, \$21,750. Playa del Rey, 823-2658. A

Pontiac, 1962 Le Mans, r/h, air cond., b/seats, 4-spd. trans., w/ swinging axles, \$650. Torrance, 370-0673. A

Adding Machine, Remington, full key, lists 9 cols. totals 10 cols., orig. cost \$85; \$65. Thousand Oaks, 805-495-6162. A

Boat, P-14 w/70" beam, fiberglass, 50 h.p. Merc. elec., lge. wheel trailer, many extras, \$975. Torrance, 324-7529. A

Motorcycle, 1967 Royal Enfield, 750 cc, \$1,250. P.V. Pen., 377-4493. A

Camper, Tropicana, 8' cabover, \$895. Hawthorne, 675-3541. A

Lincoln, 1957 Landau sedan, r/h, p/s, p/b, new eng., \$195. San Pedro, 833-2512. A

Apt, 4-bdrm., 2 1/2 baths, cpts., dps., 2-car gar., close to El Camino Col. & other schools, swim pool, clubhouse, no yard work, \$28,950. Torrance, 327-3160. A

Range, gas, Gaffers & Sattlers, \$35. Torrance, 644-6023. A

Luggage Rack, for V.W., fits above rear window, cost \$29; \$9. Hawthorne, 679-9658. A

Transmission, 1957 Chev. Powerglide, \$40. Hawthorne, 679-5371. A

Bunk Beds, complete set, maple, \$50. Lawndale, 676-6481. A

Oscilloscope, Knight kit, allied radio, general purpose, assembled & tested, \$25. Canoga Pk., 340-7120. A

Plymouth, 1959, needs some work, radiator & battery, 4 new tires, r/h, \$90. L.A., 754-9866. A

Pickup Truck, 1958 Chevrolet, new 283 eng., \$400. Hawthorne, 675-7729. A

Piano, Wurlitzer spinet & bench, cherrywood, \$425. Hermosa Bch., 372-1632. A

Camera, 35mm Argus C-3, w/flash att., Argus exposure meter, \$25. Torrance, 328-5655. A

Ski Boots, size 8 1/2 Kastinger, size 8 La Dolomite & size 9 Koflach, \$18 pr. Manhattan Bch., 545-5995. A

Camper, telescopic-type, fits 8' pickup bed, inc. \$300 3-way refrig. & \$125 camper jacks, \$600. Hawthorne, 675-2005. A

Rock Collection, all or part, case & shelf specimens, tumbled green gem stones mixed & sorted, sev. cases w/glass shelves & lights, grinder-slab polisher & tumbler, \$400. Gardena, 327-1797. A

Power Mower, Moto-Mower, rotary Briggs & Stratton eng., \$15. P.V., 377-7670. A

Mattress, never used, 15-yr. guarantee, medium firm-o-pedic, \$45. Redondo Bch., 370-9795. A

Dining Table, rattan, w/4 chairs, \$50. Manhattan Bch., 379-3487. A

Vacation Trailer, 15', sleeps 5, elec. brakes, other extras, \$475. Redondo Bch., 371-3763. A

Refrigerator, Philco, in good working order, \$30. Torrance, 328-8830. A

Camera, Nikkormat-FT, with or w/out Nikkor f/1.4 lens, \$122 or \$222 complete. P.V., 541-1625. A

Flying Club memberships, students welcome, qualified instructors, Torrance Airport, Cessna 150, \$8. hour wet, others avail., various prices. Hawthorne, 676-6138, 325-5288. A

For Sale

Motorcycle, Honda, 1963, 55 cc, \$85. Torrance, 324-5422. A

Station Wagon, 1963 Falcon, \$575. Inglewood, 674-0271. A

Hide-A-Bed, 2 end tables, 2 lamps, \$50 or sell separately. Hawthorne, 675-2514. A

Mountain Lot, Lake Gregory, walk 1/4 block to Club San Moritz, lge. building site for chalet, appraised at \$12,000; \$9,995. L.A., 370-4645. A

Honda, 1965 Superhawk, Scrambler bars, \$350. Torrance, 326-6195. A

Ford, 1930 sedan, new front end & hydraulic brakes, set up for Chevrolet V-8 & rear end, \$300. Gardena, 323-4795. A

Monza, 1965, 4-spd., low mileage, \$1,400. Simi, 805-527-3173. A

Continental, 1961, factory air, leather, full power inc. seats, windows & door locks, \$1,375. Torrance, 326-4075. A

Sunbeam Alpine, 1967 radial tires, \$1,995. Redondo Bch., 376-9875. A

Cadillac, 1958 sedan De Ville, new battery, \$300. Westchester, 645-9614. A

Motorcycle, Honda 150, new paint, tires, chrome, seat, \$275. Torrance, 325-3724. A

MGA, 1957 convt., good body, new top, needs work, \$250. Compton, 774-2502. A

Station Wagon, 1962 Corvair Monza, r/h, auto. trans., recent o/haul & tires, \$675. Garden Grove, 714-892-1945. A

Wedding Gown, brushed satin w/embroidered lace, size 11-12, \$65. Lomita, 534-0060. A

Surfboard, 9'3" Greg Noll, \$40. Torrance, 534-1974. A

Drafting Machine, Bruning, left-handed, completely reconditioned, \$65. Inglewood, 677-5900. A

Camera, Honeywell Pentax H-3 w/f/1.8 55 mm auto. lens & hard leather case, cost \$230; \$125. Manhattan Bch., 379-3487. A

Mattress, twin, box springs & metal frame on rollers, \$25. P.V. Pen., 377-6352. A

Bedroom Sets, dble. bed & chest, antique, \$175; twin bed set, 9 pcs., contemporary, \$150. Redondo Bch., 375-6017. A

Sofa & matching chair, \$75., other items, various prices. P.V., 373-2165. A

Refrigerator-Freezer Combination, Westinghouse, frost-free, dble. door, white, 14 cu. ft., \$50. Granada Hills, 363-6617. A

Transmitter, 500 watt, BC610E, \$75. Hawthorne, 679-0835. A

Valve Grinder, Black & Decker, portable, block seater kit inc. wooden chest, used once or twice, cost \$200; \$125. Buena Pk., 714-828-2857. A

Rifle, 30-30 Winchester, model 94, J. C. Higgins, sheepskin lined cover, \$79. P.V. Ests., 375-6971. A

Cradle, maple, inc. mattress, \$15. P.V. Ests., 375-5097. A

Apts, 8 2-bdrm., very low vacancy factor, income \$790 mo., low dn. pymt., \$78,000. Culver City, 837-0989. A

Wig, silver blond, orig. price, \$125; \$50. Hawthorne, 644-4177. A

Wristwatch, ladies' diamond, 68 rounds, 12 baquettes, 17-jewel, Royce movement in platinum baquette case, \$750 value, \$375. Inglewood, 673-0396. A

TV, 13" Packard Bell, walnut cabinet, \$15. Gardena, 675-2331. A

Raceway, 1965 Lionel, for h.o. scale, used 5 times, \$15. P.V., 377-4489. A

Piano, Wurlitzer spinet & bench, walnut finish, \$500. Torrance, 323-4296. A

Chair, modern, recliner, Danish, \$30. P.V. Pen., 377-6648. A

Folding Screen, 3-panel louvered wood, 63" high, \$12.50. P.V. Pen., 377-3806. A

Maternity Clothes, size 10, & baby car bed, \$10. San Pedro, 833-8238. A

Wanted to Buy

Typewriter, used manual. Hawthorne, 676-7344. B

Clarinet, used. Manhattan Bch., 379-5165. B

Editor-Viewer for 16 mm film in good condition. Lawndale, 678-9753. B

Camper Snell, 36' or 42" high to fit on 1967 Chevrolet pickup, 8' bed. Hawthorne, 676-9518. B

Jeep, 4-wheel drive, in good condition. Redondo Bch., 370-7749. B

Tires, 7:00x18, & tubes, no retreads. Compton, 635-5231. B

Boat, U-14, Valco alum. Gardena, Box 2102. B

Astronomy Club wants telescopes, lge. binoculars, mirrors, lenses. Newbury Pk., 805-498-2056. B

Door, sliding glass, 8', complete w/frame for plaster & stucco wall. Gardena, 321-2848. B

For Trade

Piano, Wurlitzer spinet, walnut, trade for 16' or longer sailboat w/trailer. Redondo Bch., 378-7116. C

Turntable, dual trade for a 35 mm camera. Hermosa Bch., 372-5485. C

Chemical Elements, 100% pure, trade for other 100% pure elements, no alloys or compounds wanted. Lakewood, 633-6346. C

Free (To Be Given Away)

Kittens, small, med. long hair, 2 black w/ white nose & paws, 2 calico mixture. Long Bch., 429-4150. D

Rentals Offered

Home, 3-bdrm., interiors newly painted, cpts., dps. furn., lge. yard & patio, children & pets OK, \$175 mo. Torrance, 371-8121. E

Rides and Riders

Rides Wanted

7 a.m. — 3:42 p.m.

From Playa del Rey, Playa del Rey. Orazio De Angelis, 670-9271.

Southern Ave. & Santa Fe, South Gate. Vera E. Heffernan, Norair, ext. 2581, 564-1988.

Inglewood Ave. & Nelson St., Redondo Beach. Dhalia Lee, Norair, ext. 2194, 370-0678.

7:30 a.m. — 4:15 p.m.

Fallbrook & Victory or Topanga Blvd. & Vanowen, Canoga Park. Veronica Stockard, Norair, ext. 1814, 1480, 347-4200.

Tribune St. & Aldea St., Granada Hills. Between Chatsworth St. & Mission Blvd. Aaron Currier, Norair, ext. 2015, 360-5029.

8 a.m. — 4:45 p.m.

Inglewood Ave. & 134th, Hawthorne. Geri Courtney, Norair, ext. 1071, 644-3957.

Ashton & Selby, Los Angeles. Celia Alper, Norair, exts. 1034, 1035, 372-8325.

Rides Offered

7:30 a.m. — 4:15 p.m.

Fallbrook & Victory or Topanga Blvd. & Vanowen, Canoga Park. Veronica Stockard, Norair, ext. 1814, 1480, 347-4200.

Tribune St. & Aldea St., Granada Hills. Between Chatsworth St. & Mission Blvd. Aaron Currier, Norair, ext. 2015, 360-5029.

Rentals Offered

Duplex, 2-bdrm., 1 bath, unfurn., cpts., dps., stove, refrig., \$175 mo. L.A., 645-4163. E

Apt, 2-bdrm, cpts., dps., bltins, sound-proofed, closed gar., 5 minutes to Nort. P.V., 15 min. to Norair, avail Nov. 1, \$125 unfurn.; \$145 furn. Torrance, 375-2091, 375-9397. E

Home, lge. 4-bdrm., family rm., bltins, cpts., 2-car gar., unfurn., lease, \$150 mo. Corona, 714-735-7845. E

Vacation Cabins, Idyllwild, 1 & 2 bd rms., fireplace, stream, patios, \$20-\$35 w/ends; \$45/\$75 wk. L.A., 754-5288. E

House, 3-bdrm., 5 minutes from Northrop, children & pets OK, \$145 mo. Lennox, 372-5985. E

Apt, 2-bdrm., 2 baths, disposal, cpts., dps., unfurn., gar., water pd., close to Northrop, laundry facilities, \$150 mo. Inglewood, 672-5798. E

Apt, 2-bdrm., 2 baths, furn., upper front w/pvt. balcony, extra carpets, \$180 mo. Inglewood, 671-0835. E

House, 2-bdrm., furn., dble. gar., \$140 mo. Gardena, 324-7688. E

Vacation Cabins, Lake Gregory & Crestline, sleep 6, make reservations now, \$25 w/ends; \$60 wk. Venice, EX 1-2040. E

Apt, 1-bdrm., furn., all bltins., pvt. deck, lge. pool, sub. parking, near Northrop, \$150. Lawndale, 679-2117, 670-6084. E

Bachelor Apt, furn., closed gar., lge. walk-in closet, near park, \$100 mo. Torrance, 328-9199, 375-0867. E

Apts., furn., 1-bdrm., pool, 15 min. from Northrop, adults, \$100 mo. & up. L.A., 296-4554. E

House, 2-bdrm., furn., alone on lot, Inglewood, avail. Nov. 10, adults, no pets, \$97.50 mo. Burbank, 848-7790. E

House, unfurn., 2-bdrm., den, encl. patio w/fireplace, closed gar., water & trash pick-up paid, many extras, \$180 mo. Inglewood, 671-4310. E

Rentals Wanted

House, 1 or 2-bdrm., Paramount, Lakewood, Long Beach area. Woodland Hills, 375-6162. F

House, 2 or 3-bdrm., unfurn., or ground floor apt. w/gar., in Inglewood/Westchester areas, 3 adults, references to \$185. Torrance, 371-1830. F

House, 1 or 2-bdrm., furn., near Beverly Hills, between now & January 1, any price up to \$200 mo., Brentwood, Encino, Sherman Oaks or Santa Monica locations preferred. Brentwood, 476-5788. F

Sleeping Room, for 3 or 4 nights during week, private residence acceptable. Rialto, 714-875-8495. F

Child Care Offered

Babysitting, my home, days only, South Bay area. Redondo Bch., 379-3322. G

Child Care, all ages, all hours. Hawthorne, 644-3817. G

Found

Glasses, prescription, brown shell frame, left about 2 weeks ago, DSSP area, Bldg. 6, Nortronics P.V., ext. 541. K

Personals

I wish to express my sincere appreciation to my wonderful friends at Northrop for the cards, messages & visits. JAN WOODS L

We would like to express our sincere gratitude to all our friends at Nortronics for their generous contributions & deep concern in the recent death of our sister, Mrs. Tani. HIRO & DICK FUKUDA & FAMILIES. L

Desire to store piano, any type, in my home in exchange for use in practicing. 2 adults, musicians, will transport. Box 2103. L

For Sale or Trade

Living Room Sofa, recently recovered, \$75 or trade for one of equal value which makes into bed. Torrance, 326-4944. M

Power Mower, reel-type, Sunbeam, used very little, \$50 or trade for portable TV. Gardena, 329-6728. M

Coupe, Model A 1930, original, \$695 or trade for pickup. Gardena, 324-2942. M

Taigate window motor for '61 Falcon station wagon, cost \$15; \$10 or trade for ammo., .357 mag., .38 spec. or .22 cal. Box 2104. M



## Air Force Testing Begins On Electronic Eye System

A United States Air Force jet fighter with an "electronic eye-ball" to help pilots select and track targets is being tested at Eglin Air Force Base, Florida, by the Air Force Armament Laboratory.

The electronic eye is part of a small television-aided missile guidance system, developed jointly by Northrop Corporation's Nortronics Division and Southern Research Institute, Birmingham, Alabama. Initial development was under the direction of U.S. Army Missile Command.

The purpose of the current flight tests is to measure the system's effectiveness in locating targets at close and long range. Also

being tested is the pilot's ability to find and select targets as they appear on a television screen in the aircraft's cockpit.

The device achieves high accuracy by automatically tracking the center of an object according to the contrast between the target and its background.

It helps an operator acquire a target and, once launched, it performs as a completely self-contained system in guiding the missile to the target. The self-containment feature gives the optical seeker an edge over similar systems which require a link between operator and missile.

In a typical air-launch situation, the pilot aims his aircraft at the target so that the seeker's video sensor picks up the target object and displays it on a cockpit monitor. By manipulating a control, the pilot positions cross-hairs directly over the target.

At the intersection of these cross-hairs is a small rectangular area bounded by four video "gates." As the pilot initiates the automatic tracking mode, these gates adapt themselves to the contour of the target and lock onto the contrast between the target and its background.

One of the big advantages of the system is that it allows a pilot to "launch and leave;" that is, he needn't risk exposure in the target area by following a launched missile to monitor its terminal trajectory.

Another advantage is that a pilot is relieved of the problem of aiming the missile through a device positioned some distance from the missile. With the optical seeker, he looks through the same signal processor the missile system uses after launch. He therefore sees what the missile itself "sees."

The system was designed for short range use, but the technique can be applied to longer range systems by employing larger video sensors and longer focal-length optics.

"In many cases," one project official said, "the optical seeker would be capable of exceeding the range potential of infrared seekers."

## Orange County, Hawthorne JA Companies Set

Northrop Nortronics will again counsel two Junior Achievement companies in the 1967-68 school year.

Both companies are presently going through organizational stages, one in Orange County, the other in Hawthorne.

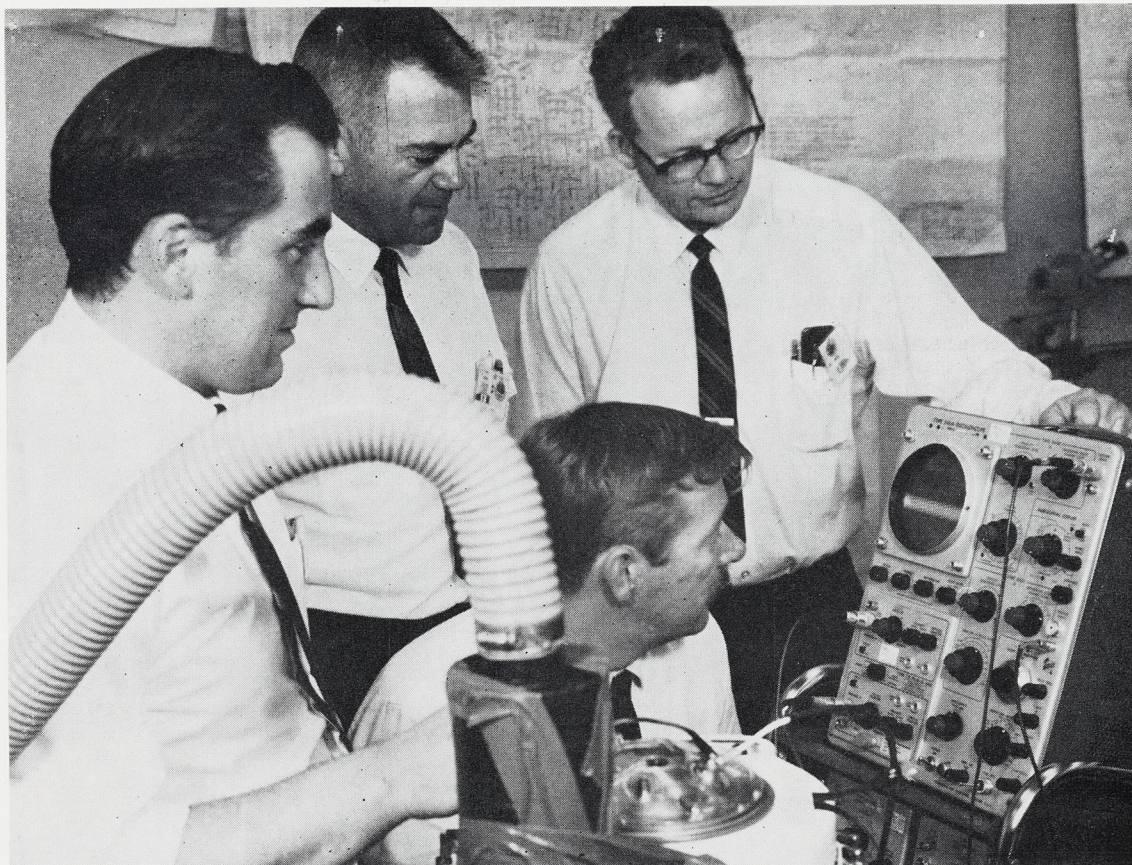
Bob Varner (management), Don Myers (production) and Tom Sneed (sales) will serve as advisors for the Orange County firm. Alternates are Leo Gross, Bob Russell and Tom Maxwell. This firm will produce and market a handy tool rack, operating under the name of ORCO.

Harry Basford (management), George Downs and Anthony Musuraca (production) and David Lawrence (sales) will advise the firm in Hawthorne. This group was scheduled to meet late last week to select a name and a product.

Election of company officers is pending with both companies.

## 'Harvest Moon Ball' Tickets Available

Tickets for NRC's annual "Harvest Moon Ball" to be held October 28 (9 p.m. to 1 a.m.) at NRC Clubhouse, Hawthorne, are now available through Personnel Activities outlets.



**IMU CORE TEST**—Personnel from the Nortronics Instruments and Controls Laboratory conduct stabilization test of C-5 configuration of the Floated Inertial Platform Assembly, the

heart of the Inertial Doppler Navigation Equipment's Inertial Measurement Unit. Test personnel are (from left) Bill Brown, Mike Long, Walter Brock and Bill McDonald.

## First Ski Club Meeting Planned For November 16

Members of the NRC Ski Club will have a busy agenda before them next month when they hold their first meeting of the fall season.

The meeting, open to all Nortronics and Norair personnel and their families, will begin at 7:30 p.m. November 16 in the NRC Clubhouse in Hawthorne.

Reservations will be taken at the meeting for a December 2 and 3 ski trip to Mammoth. A longer trip, to Aspen, Colorado, from February 16 through 24, will be discussed.

In addition, dry land ski lessons will be scheduled, a ski movie will be shown, and commissioners from Nortronics and Norair will be elected. Refreshments will be served.

Additional information may be obtained by calling Severin Dahlen, Norair commissioner, on ext. 4496 or ext. 4940.

## NAVIGATION EQUIPMENT

### C-5 Testing Successful

A critical step forward in Nortronics' development of a navigation system for the C-5 transport was successfully taken recently with the completion of tests of the system's Floated Inertial Platform Assembly.

The assembly is the core of the C-5 Inertial Doppler Navigation Equipment's (IDNE) Inertial Measurement Unit (IMU), and its stabilization was an extremely important phase in the completion of the total navigation system.

The function of the IMU, one of 11 major pieces making up a complete C-5 IDNE, is to "sense" the motions of the aircraft.

Information of aircraft motion, determined by the IMU, is transmitted to the IDNE computers which use it to calculate the position and heading of the airplane.

For the IMU to perform this function, however, the Floated Inertial Platform Assembly must provide a stable base for the IMU "sensors."

The achievement of this solid base was marked by the successful completion of the IMU test performed by Instruments and Controls personnel.

According to Karl McCready, deputy director of the Instruments and Controls Laboratory, this was considered the "moment of truth" for the new version of the IMU core.

Months of design and development work, starting in March 1966, have gone into the adaptation of the proven Nortronics NIS-105 Floated Inertial Platform to the more stringent requirements of the C-5.

The floated inertial ball concept is an idea first conceived in 1960 by three Nortronics

engineers.

They are W. G. Baker, Tactical Tracking Systems unit; R. E. Gagon, chief of the Mechanical Development group; and C. L. Bose, Advanced Avionics Laboratory.

The next step, which is in process now, is the testing of the IMU with the remainder of the IDNE system.

## MANAGEMENT

(Continued from Page 1)

program manager; and L. H. Brennwald, manager, Support Operations department.

Other Lockheed executives attending the meeting were:

Lee Poore, Lockheed-Georgia Company vice president and C-5 program manager; Jack McChesney, Lockheed-Georgia, special assistant for Nortronics; Bill Boyd, resident representative, C-5 Purchasing; Bud Haddox, C-5 resident engineer; E.B. Gibson, C-5 engineering manager; Dave Webster, C-5 quality assurance manager.

Howard Hampson, Lockheed Missiles and Space Company, Polaris resident manager; Steve Schached, LMSC senior technical publications representative; Bob Kruse, LMSC senior engineering representative; and Frank Stanfield, LMSC senior subcontract representative.

## NORAID DRIVE

(Continued from Page 1)

more than a half-million dollars has gone to fellow employees.

Last year Northrop personnel gave \$300,190 to AID-NORAID causes.

Unlike most fund drives which strive for a set dollar goal, AID-NORAID simply encourages participation of as many employees as possible.

Approximately 150 Northrop campaign workers will handle the mechanics of the campaign, working in various facilities, departments and functions. They will distribute campaign material and required sign-up cards.



**NEW EQUIPMENT**—Earl Parks, a member of the Northrop Radio Club, operates the club's new Hallicrafters SR-2000 SSB transceiver. The station operates on the 40-meter band, but soon will have antennas for 80 through 10-meter operation. Interested amateurs may obtain addi-

tional information from club president Bill Anderson on Norair ext. 1933. The club, which has members from Nortronics and Norair, will next meet at 5 p.m. November 13 in the NRC Clubhouse in Hawthorne.

## Annual Table Tennis Tournament Nears

An all-Northrop table tennis tournament held once each year will take place from 1 to 5 p.m. Sunday at Brookhurst Junior High School (Brookhurst St. and Santa Ana Freeway), Fullerton.

Entries, however, must be made today, October 25.



# NORTHROP NEWS

NORTHROP NORTRONICS

Published biweekly by Northrop Corporation, Beverly Hills, California

Vol. 25, No. 22

November 8, 1967



**QUARTER CENTURY CLUB**—Kirk Hunt (center) holds gavel and expounds jokingly on his idea of special rights Northrop 25-year veterans should have. Mr. Hunt was named

president of the Nortronics Quarter Century Club at annual Recognition Dinner. At right is Vice President Oscar Gumpert. Bill Nelson (left) was master of ceremonies.

## Apollo 4 Spacecraft Scheduled for Orbit

The world's most powerful rocket system is scheduled to soar aloft from Cape Kennedy tomorrow in resumption of America's Apollo lunar flight program.

Under the mission name of Apollo 4, an unmanned spacecraft will be rammed into an elliptical orbit reaching more than 11,000 miles out from earth, then plunged earthward again at lunar return speed—25,000 miles an hour.

At the end of the near nine-hour journey, Apollo 4 will make its searing re-entry through the earth's atmosphere and descend to a Pacific Ocean landing beneath its Northrop Ventura-produced parachute recovery system.

Apollo 4 will mark the first—and all up—flight of the giant Saturn V rocket system developed under direction of the National Aeronautics and Space Administration for the purpose of landing Americans on the moon and carrying out more extensive explorations of the Solar System.

When fully fueled on Cape Kennedy Launch Pad 39, Saturn V will stand 364 feet tall, and weigh 3,100 tons. At the end of

the flight, all that will return to earth under the Ventura-built Earth Landing System will be the 5½-ton Apollo command module. In later flights, this command module built by North American Rockwell's Space Division will carry three men into earth orbit and subsequently to the moon.

Its five J-2 engines will provide one million pounds of thrust during the six-minute second stage burn. When this stage, in turn, is dropped away, the third stage with one J-2 engine (200,000 pounds thrust) will ignite.

When the third stage is cut off, Apollo 4 will be in a circular parking orbit around the earth—115 miles high at 17,500 miles an hour. It will remain in this orbit for two revolutions around the earth while a plot of speed and position is computed by the mission control center at NASA's Manned Spacecraft Center in Houston.

While it coasts, the spacecraft and its attached service module will be tested for 4½ hours with one side turned to the sun and the other to the cold of dark space. This is to determine the effects of hot and cold soak upon the onboard instrumentation.

Nearly six hours after liftoff, Apollo 4 will begin to return under the pull of earth's gravity. By means of small control engines, it will re-orient itself and point toward the earth. The service propulsion system will be fired for 4½ minutes, pushing the vehicle downward at lunar mission return speed of almost 25,000 miles an hour.

At 23,000 feet the two 13-foot drogue parachutes will deploy to stabilize and decelerate the spacecraft. At 10,200 feet the three 83.5-foot main parachutes will deploy for the final descent.

## Quarter Century Club Holds Annual Dinner

Northrop Nortronics' select Quarter Century Club welcomed 27 new members into its ranks last month.

The occasion was the club's second annual Recognition Dinner honoring Nortronics men and women who recently completed their 25th anniversary of working with Northrop.

Joining the new members at Restaurant Alfred in Long Beach were a majority of the 25 members, and four associate members, who organized the club one year ago.

### Special Guests

Wives and husbands of members were special guests.

During a short business session, the members elected their first slate of officers. They are: Kirk Hunt, president; Oscar Gumpert, vice president; and Frieda Mooring, secretary.

More than anything else, the October 30 event was a time for relaxing, greeting old friends and talking of Northrop yesterday and today.

Guest speaker for the evening was Frederick Stevens, Northrop vice president and Nortronics general manager.

Mr. Stevens recognized each new club member individually.

### Northrop's Past

In his comments, Mr. Stevens spoke of the many things that have happened to Northrop over the past 25 years. He spoke of Northrop's pioneering developments which have been important to the aerospace industry and the United States. He traced a history of steady and solid growth in which Northrop has established itself as a reliable com-

pany, manned by people who know their jobs.

"Each of you has been a part of all this," Mr. Stevens said. "You, and others like you, have put Northrop where it is today, and have formed the base for what it will be tomorrow."

Speaking of the future, Mr. Stevens said Northrop cannot afford the luxury of status quo and must meet many new challenges to sustain its growth.

### Optimism Seen

"Personally, I view Nortronics' future with extreme optimism," Mr. Stevens said. "We have a better grasp on where we are going than ever before in our history. We are not dependent on any single program, and have a diversified line of products that assures us continued growth in the years ahead."

### Special Tribute

In his closing comments Mr. Stevens paid special tribute to the wives, husbands and children of Quarter Century Club members.

Elmer Noonan, director of Industrial Relations, thanked each club member for his services and especially the high standard of achievement which has been maintained.

Bill Nelson served as master of ceremonies for the evening as a representative of the four-man committee that has guided the club over the past year and prepared its by-laws, approved at the dinner. Other members of that committee are Grant Gunderson, chairman, John Baker and Al Vogel.

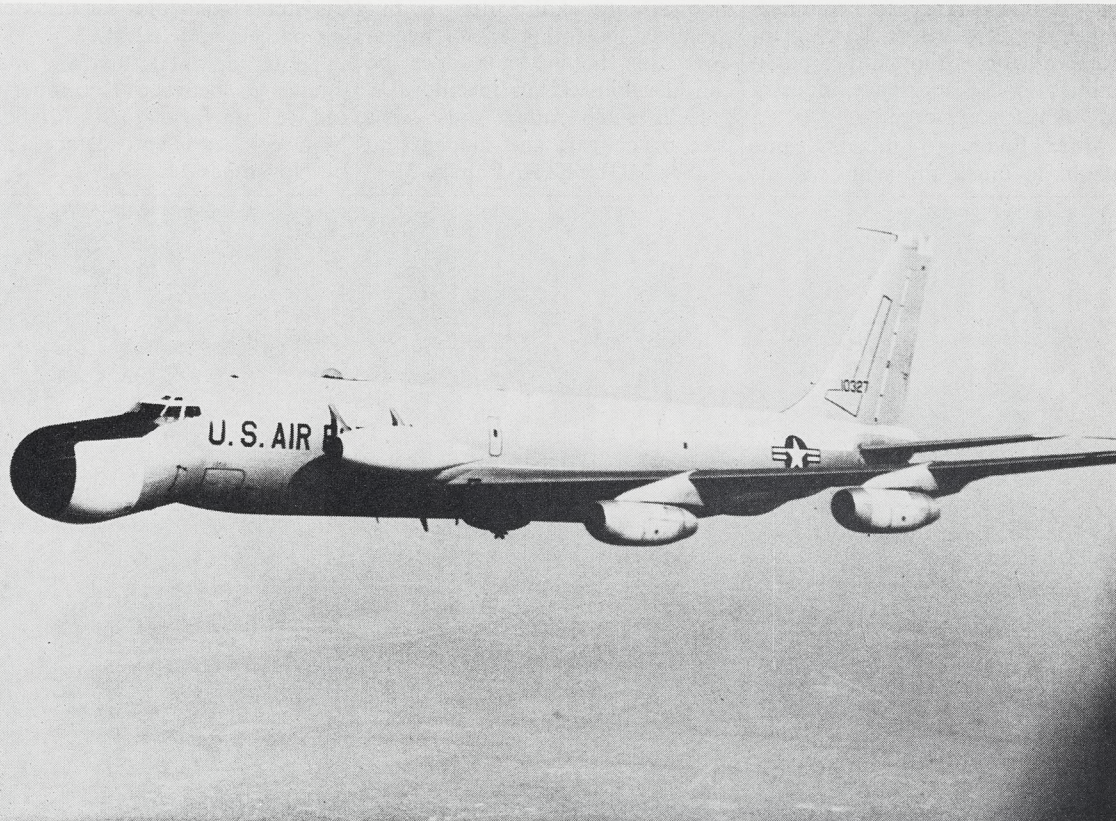
Welcomed as new members to (See ANNUAL DINNER, page 4)

## Toastmasters Elect Officers for 1968

Hank Greenberger of Nortronics Palos Verdes heads a slate of new officers installed for 1968 by the Northrop Toastmasters Club.

Dick Greetan, educational vice president; Walt Darby, administrative vice president; Elmer Davis, secretary; Al Weinstein, treasurer; and Doyle Shook, sergeant-at-arms, are the other officers.

Individual honors bestowed included those to Mr. Shook as the most improved speaker, Mr. Weinstein as the most dedicated toastmaster, and co-honors to Mr. Greenberger and Felix Dunnett as toastmaster of the term.



**MONITORING HISTORIC LAUNCH**—Airborne Lightweight Optical Tracking System (ALOTS), developed and built by Northrop Nortronics, is expected to fly in this modified C-135 this week to monitor boost phases of Apollo/Saturn 5 flight from Cape Kennedy.

ALOTS pod on side of aircraft contains 70mm television camera. Bulbous nose contains tracking and telemetry systems. This week's flight will be of further interest to Northrop employees as the Apollo parachute landing system was developed and produced by Northrop Ventura.

## Basketball Leagues To Have 'New Look'

Something for everyone is offered this year in three NRC shop basketball leagues for the Hawthorne area.

Each of the three leagues is comprised of players with varying amounts of experience, from one extreme to another. Practice sessions are now in progress. A pre-season tournament will be held in late November, with regular league play set to begin in January.

Contact Personnel Activities for information.



# Bodewig's 'Mousetrap' Accepted for License

Build a better mousetrap, and the company will beat a path to your door. Such was the case with Don Bodewig, supervisor of Field Service in the Navigation department at Northrop's Hawthorne; except his "mousetrap" is a mirror, and the beaten path was to the door of Northrop's John Oliver, Corporate administrator of Product Licensing.

Mr. Bodewig has devised and developed a flexible mirrored membrane, coupled with a hand-operated vacuum pump. He calls it his "variable f-number mirror," and at least one adaptation of it may be available to consumers by early spring.

## How It Works

The unit is not rigid or of glass with a silvered back as we now know mirrors. Mr. Bodewig's prototype is Mylar-based and vacuum electro-coated with a whisper-thin film of aluminum. The membrane is sealed over a frame housing, creating a chamber which may be pressurized or evacuated. A small plunger on the side of the housing can add or remove air from the chamber, thereby changing the position of the surface of the membrane, and creating variable focal lengths.

If all this smacks of Buck Rogers, consider: Product Licensing has already awarded to Goodrich Products in El Segundo the exclusive Northrop license to manufacture the device, the first application of which will be in ladies' compacts and as dressing table mirrors.

## Faces In Focus

Its interest to the women evolves around the ease with which they can apply makeup using the new mirror. Farsighted ladies can remove their eyeglasses and, instead of a blurred face in the glass, see their own image in sharp focus after "pumping" the mirror to the proper position. The nearsighted man in the family can reposition the mirror to accommodate his vision for close-up shaving.

Later, the concept may be incorporated into telescopes for amateur astronomers, or enlarged many times for countless other applications such as giant solar mirrors. Many future possibilities in the aerospace industry are as yet unexplored.

Mr. Bodewig's mirror came about in much the same way as

many of the world's inventions: quite by accident. He was covering a dish of leftovers for the refrigerator, and while stretching the transparent wrap over the dish noticed that the overhead kitchen light was reflected more or less sharply as the position of the wrap changed. Immediately Mr. Bodewig set about the formulation of the idea, developed a prototype, and Northrop took it from there.

But that's not unusual. Northrop has been assisting its employees with the development and licensing of their inventions since the Product Licensing Office opened in 1950. Significant is the fact that most ideas which individuals submit, and which are eventually licensed, are not products adaptable to the aerospace industry or even usable by Northrop.

## Why Licensing?

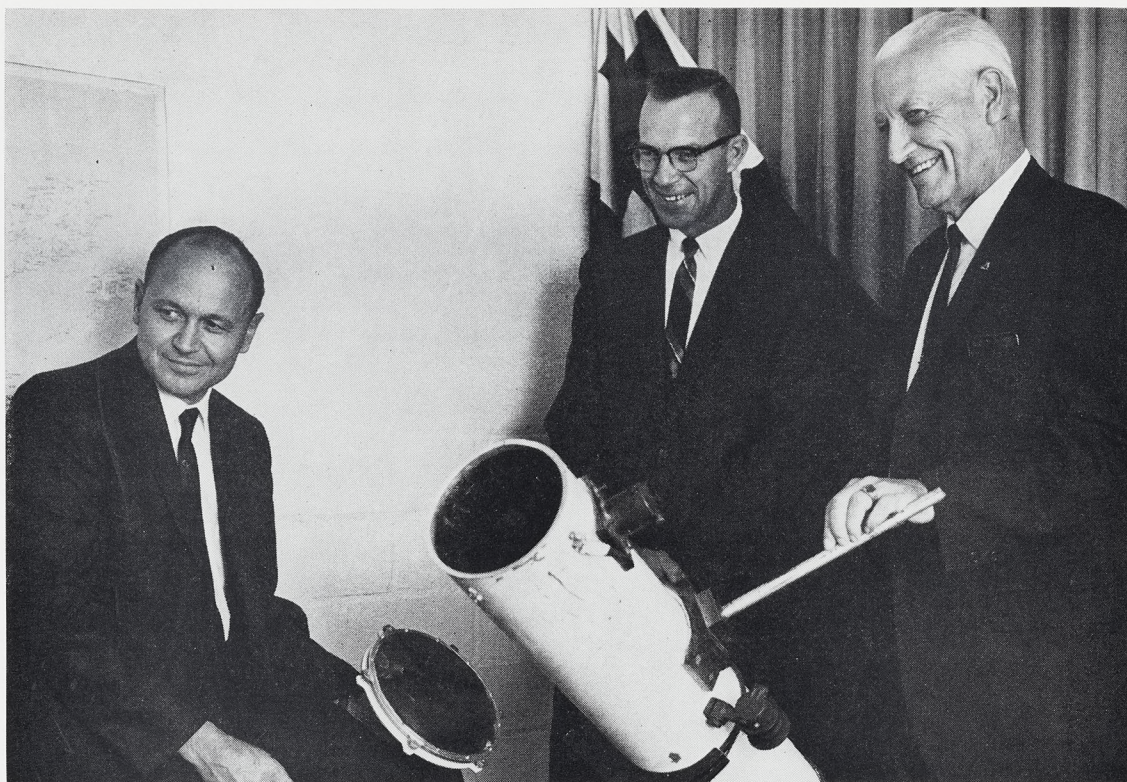
For the most part, Northrop Licensing was created to channel the by-products of aerospace technology into worthwhile commercial applications. Over the years, however, the office has dealt with literally everything from toys to templates, and still averages one new idea a week. "But, we could handle a lot more," says Assistant Licensing Administrator Stan Peterson, "and we would like all Northrop employees to be aware of the company's liberal patent award plan." Under this plan, the inventor receives a share of all gross income received by the company resulting from the licensing or sale of the invention. His shares range from 20 per cent to five per cent, depending on the amount of income.

## Other Advantages

There are many other advantages that the plan affords the employee-inventor, and both the patent office (Norair ext. 4608) and Product Licensing (Norair ext. 4651) are available to discuss details and answer related questions.

To date, Mr. Bodewig has discussed numerous ideas and has them on file in the Northrop Licensing Office, including a unique putty knife design; but strangely, inventing is not necessarily his hobby, nor does he consider himself an inventor.

He'd much rather stalk bear, deer or cougar; and manages to (See **MOUSETRAP**, page 3)



**THINGS TO COME**—A prototype of a telescope utilizing a unique flexible mirror invented by Northrop's Don Bodewig (center) is examined by Mr. Bodewig, with Bob Goodrich

(left), and John Oliver. Mr. Goodrich is president of the company which will market items made with Mr. Bodewig's mirror. Mr. Oliver is Corporate administrator of Licensing.

## Reservations Available For Holiday Dance

Northrop Corporation's annual Holiday Dance will be held from 9 p.m. to 1 a.m. December 2 at the International Hotel in Los Angeles.

The International Ballroom and the Gold Room have been reserved for Northrop use. Dining reservations may be made at the Hunt Room or Penthouse prior to the dance by calling 670-9000.

Tickets sell for \$2 per person for the dance only. They may be obtained at any Personnel Activities ticket outlet. Reduced parking rates will be available with validations.

## Deadlines Scheduled For Christmas Mail

Northrop families planning to mail Christmas remembrances to military personnel overseas may be interested in the following Pentagon-issued "mail early for Christmas" schedules for dispatching parcels and letters.

Those destined for air mail should go between December 1 and 11; by Special Air Mission, by December 1; and surface mail, by November 11.

## Wilson, Powell Winners In Meeting of Golf Champs

Virgil Wilson and Ed Powell teamed to win honors recently in a Tournament of Twilight Champions held at Valencia Country Club among champs from each of the NRC-sponsored summer golf leagues.

Second-place went to Wayne Ardinger and Jim Putkoskie, while Dick Bartholomew emerged as low gross individual winner.

In other action, Max Sturgill and Len Peterson won a playoff among short course league participants. Other round winners in this category were Dick Donnici-Frank Rosenthal, Frank Blair-Joe Clontier and Chet Donaldson-Harold Dietrich.

Champions from the 16 long course leagues were:

Victoria Park—Bill Guenther-Harold Johnson, Claude McGirt-Joe Petty, Thurston Morita-Jay Cluck, Bob Bagby-Kurt Reid.

Alondra Park—Tak Kawashima-Joe Rey, Roger Schilling-Gary Wycoff, Loyal Massey-Frank

Blair, J. A. MacDonald-Harold Weller, Tom White-Chuck Fleming, Conrad Pearson-Tex Gentle, Jim Steele-Bill Putnam, Bud Wegnes-Earl Saunders, Bert Osterberg-Jay Osterberg, John Solema-Oscar Sanchez, Don Riddle-Jack Gordon, Tom Sellinger-Rudy Dennis, Fran Connors-Godie Bezner, Nell Ebright-Bob Blakney, Jim Rondo-Roger Stone, Virgil Wilson-Ed Powell, Ken Turner-Harvey Cook, Ted Deguisne-Jim Matthews.

Western Avenue—Don Agee-Bob Sheetz, Bruno Vigo-Don Rice, Chuck Taylor-Merv Burne, Jack Kuster-Bob Fortney, George Bardezbonian-Ollie Pellerin, Dick Outcault-Rollie Pierce, Dick Bartholomew-Bob Dixon, Paul Finwall-Bob Macosko, Don Gregor-Carl Soldin, George Sepel-Hank Gates.

Fox Hills — Bob Tompkins-Frank Sullivan, Oscar Sanchez-Andy Washington.

Los Verdes—Jack Koletty-Tom Asahina, Ed Kong-Bob Marsh.

## VOLUNTEERS FOR YOUTH

### Eleven Join 'Task Force'

Eleven Northrop Corporation employees—five women and six men—are volunteering their time and talents in support of the 1967-68 Vice President's Task Force on Youth Motivation.

Three of the eleven, Floyd Boggus, David Saldana and Edward Aguilar, all of Norair, participated in a successful pilot program last year which led to the establishment of this year's effort.

Entering the program for the first time this year are Lynn Lawson, Jewell Jackson and Annie Rios of Northrop Data Processing; and Vanessa Herod, David Moses, Harold Washington, Jr., Richard Rosas and Emma Perez, all of Norair.

Participants took part in special briefings late last month and made their first personal appearances for the program. They will repeat this performance again in December and next spring.

Basically, the program is aimed at youth now enrolled in Los Angeles area secondary

schools. It is motivation by individual example. Those taking part visit the schools and talk with students. They explain their work, its rewards, its requirements and what education is needed to perform it. In simple terms they tell their story and through the story urge the youngsters to continue their education.

The theme of the current program is "Things Are Changing." It stresses the idea that changes are taking place for the person who is prepared to accept the challenge of progress by continuing his education in his chosen field.

This unique face-to-face program is a nationwide one supported and guided by Vice President Hubert H. Humphrey. It is being carried out locally through the cooperation of the Task Force on Youth Motivation, the Office of the Superintendent of Schools, Los Angeles, and the Los Angeles Merit Employment Committee.



**TASK FORCE**—Members of the Vice President's Task Force on Youth Motivation are (standing, from left) Richard Rosas, David Moses, Floyd Boggus, Edward Aguilar and David Saldana, and (seated, from left) Vanessa

Herod, Emma Perez, Norman Lincoln, Jewell Jackson, Lynn Lawson and Annie Rios. Not pictured, but participating, is Harold Washington, Jr. All except Mr. Lincoln, Task Force coordinator, are Northrop employees.



Classified

Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private businesses are not accepted. The Northrop News reserves the right to edit or omit ads. Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 62. Ads are limited to one item and one ad per person each issue. Deadline is noon Wednesday, one week before publication.

For Sale

**Rocker**, wicker back, \$10. Torrance, 328-5840. A

**Vacuum Cleaner**, Hoover upright, \$20. Gardena, 675-2331. A

**House**, 3-bdrm., 2 baths, lge. lot, fenced, dps., cpts., family room w/bar & fireplace, assume GI loan, \$24,900. Torrance, 830-3792. A

**Skis**, Fischer alum. combin., bindings never been mounted, length 195 c.m., \$130. Torrance, 329-2872. A

**Engine**, Mercedes-Benz 190 SL, bare block, \$140 or sell components separately. Hermosa Bch., 375-7038. A

**House**, 1¼ bath, 3-bdrm., cpts., block walls, sprinkler system, walk to Norair & Nortronics Hawthorne, \$23,950. La Palma, 714-521-5483. A

**Sewing Machine**, portable, Singer, forward & backward stitching, light bulb, \$85. Manhattan Bch., 545-1662. A

**Ski Boat**, 15', 45 h.p. Mercury, fully equipped, \$495. Gardena, 324-2942. A

**Jewelry**, carved pendant & matching drop earrings, jade, light green, \$300 value, \$150. Inglewood, 673-0396. A

**Honda**, 1965, 150, \$375. L.A., 754-3037. A

**Transmitter**, Hallicrafters HT-32, stable, closely calibrated, \$200. Granada Hills, 363-0185. A

**Skis**, 3 pr., Hart, \$69. Manhattan Bch., 545-5995. A

**Pontiac**, 1967 Firebird, 326 cu. in. eng., 3-spd., disc brakes, full warranty, fully equipped, 4,000 miles, \$2,850. Hawthorne, 676-8738. A

**Milling Machine**, Benchmaster, auto. feeds, \$300. Hawthorne, 675-7729. A

**Wig**, silver blond, Indonesian hair, hand-tied, orig. price \$125; \$50. Hawthorne, 644-4177. A

**Movie Camera**, Canon Super 8, 518, tele-converter lens, Bell & Howell, inc. projector, screen & tripod, \$295. Manhattan Bch., 372-7075. A

**Pickup**, 1958 Chevrolet, r/h, stick shift, good tires w/metal trailer, \$500. Lawndale, 371-2360. A

**Corvaire**, 1964 Monza, big eng., 4-spd., radio, w/s/w, \$795. Manhattan Bch., 376-5139. A

**House**, 3 bdrm., view L.A. harbor, Long Bch., \$35,000. San Pedro, TE 3-9455. A

**Wing Chair**, lge. print, \$50. Hawthorne, 675-7965. A

**Folk Guitar**, w/case, \$25. Rolling Hills Est., 375-8536. A

**Mini-bike**, 8 h.p., \$169. Santa Monica, 393-7464. A

**Shotgun**, Remington pump, model 10, 12 gauge, \$75. Hawthorne, 679-7274. A

**Apartment**, "own-your-own," large 1 bdrm., upstairs above carport, pool, bltins, w/w cpts., dps., \$16,750. Inglewood, 674-7743. A

**House**, 3 bdrm., custom built, walking distance to elementary school, trailer complex and 747 bldg., \$23,950. Inglewood, 671-6187. A

**House**, 3 bdrm., 2 baths, family room, bltins, forced air heat, fireplace, near El Camino College, North Torrance, \$30,950. Torrance, DA 3-8531. A

**Bunk Beds**, convert to twin beds, Salem maple, spool design, no mattresses, \$25. L.A., PL 5-1925. A

**Typewriter**, Smith-Corona, Galaxie II portable w/case, \$70. Manhattan Bch., 545-1348. A

**Duplex**, N. Manhattan Bch., lge. 2-bdrm., unfurn., 1-bdrm. furn., ½blk. to ocean, beam ceilings, bltins, new cpts., dps., & paint, income \$310 mo., \$40,950. Redondo Bch., 375-7130. A

**Hearing Aid**, never used, w/5 batteries, \$50. Hawthorne, 675-1982. A

**Shotgun**, Remington, 12 gauge, auto., w/vent. rib, \$85. Redondo Bch., 374-1509. A

**Freezer-Refrigerator**, Hotpoint, copper, frost-free, used 1 yr., \$150. Long Bch., 423-5690. A

**Automatic Washer**, Kenmore, 6 yrs., \$40. Downey, TO 2-3310. A

**Motorcycle**, 1966 Yamaha, 60 cc, 3,500 miles, recent work, \$200. San Pedro, 833-3334. A

**Camera**, Polaroid 900 w/wink light, leather carrying case, \$75. Lawndale, 370-3821. A

**Freezer**, 16 cu. ft. chest type, Coldspot, \$65. Lakewood, 925-9776. A

**Windows**, 30" x 46" louver w/screens, drapes, \$50. Gardena, DA 9-7447. A

**Transmitter**, Ranger I, \$85. P.V., 377-1990. A

**Wheel Chair**, Hollywood, \$50. Long Bch., 634-1489. A

**Retirement Home**, 1 bdrm., all knotty pine interior, on ½ acre in upper Morongo Valley, view, lge. underground storage, cooler rm., \$10,500 w/\$3,000 down. Redondo Bch., 370-7092. A

**Gas Range**, 40" O'Keefe & Merritt, \$30. Gardena, 329-6420. A

**Golf Cart**, folding, \$5. Torrance, 370-6734. A

**Puppies**, beagle, AKC, male & female, \$55. Redondo Bch., 379-0391. A

For Sale

**Juke Box**, 20 plays, 78 rpm, \$25. Torrance, 371-4025. A

**Playpen**, Cosco nylon net, w/pad, \$10. P.V., TE 3-7819. A

**Wig**, human hair, med. auburn, cleaned and styled, w/stand and vinyl case, \$70. Hawthorne, 679-3896. A

**Band Saw**, 12" Craftsman w/steel stand, motor, \$100. Downey, 633-6082. A

**Hot Plate**, 2-burner w/adj. heat control, \$6. L.A., 477-8791. A

**Gun Cabinet**, corner, glass doors, natural finish, matching shelf w/drawer, \$30. Manhattan Bch., 823-2242. A

**Stereo Tape Unit**, "SJB" car model, \$65. Hermosa Bch., 379-4075. A

**Swim Pool**, 24' Doughboy, \$125. Gardena, 324-3760. A

**Bicycle**, 24" Schwinn, boy's, \$10. Manhattan Bch., 374-8608. A

**Windows**, 3' x 4' casement, \$3. Torrance, 320-3440. A

**Skis**, Yamaha high flex-C w/marker toe and lock cable bindings, \$65. Manhattan Bch., 545-4682. A

**Dalmatian Pups**, AKC, champion stock, 7 weeks, shots, \$100. Palos Verdes, 377-3811. A

**Pistol**, .38 Smith & Wesson, M&P model, 6' barrel, \$50. Anaheim, Box 2201. A

**Sofa**, 10' contemporary, quilted, casters, Scotch-Guarded, green/gold, \$200. Long Bch., 596-9748. A

**Airplane**, 1948 Bellanca 14-13-2 four-place, retractable, red, white, w/black trim, Ceco-nite cover, 165 Franklin heavy case engine, rebuilt alt. cont., aeromatic prop. omnigator, \$4,250. Long Bch., GA 4-9750. A

**Lot**, Club San Moritz at Lake Gregory, approx. 90 x 90 ft., \$6,950. Torrance, FR 5-4987. A

**Apartments**, six 2-bdrm. units, all rented, income \$625 per mo., w/2 bdrm. owner's house on two lots, 6 carports, lge. play yard for children, \$85,000. Torrance, 320-2827. A

**Slot Car**, 1/24 Cox Ford G.T. w/Cox controller, case, \$12. L.A., 645-4697. A

**Luggage Rack**, \$7.50. Torrance, 835-2396. A

**Toy Poodle**, 5 months old, male, A.K.C., \$35. Gardena, NE 5-3837. A

**Novelty Jewelry**, unusual assortment, \$2 to \$5 ea. Torrance, 370-3752. A

**Mobile Home**, 1½55 Anderson, 1 bdrm., new 20 gal. water heater, disposal, bltin. range-oven, forced air heat, \$1,800. Baldwin Pk., 962-1360. A

**Auto Parts**, all components to convert '50-'59 Oldsmobile to standard shift, \$70. L.A., 677-6387. A

**Piano**, Wurlitzer spinet, fruitwood, \$750. Rolling Hills Est., 378-1876. A

**Accordion**, full 120 base, \$100. Torrance, 326-6195. A

**House**, Palm Springs, 3 bdrm., 1¼ baths, pool, patio, bltins, air cond., extra large corner lot, \$23,500. Torrance, 324-5422. A

**Sailboat**, Firefly, 12 ft. sloop, deck, Uffa Fox design, molded plywood hull, trailer, \$695. Redondo Bch., 377-5862. A

**Parallel Bars**, \$150. Redondo Bch., 542-1248. A

**Stud Service**, Pomeranian, sable color, 3 yrs. old, AKC reg., \$25. Inglewood, OR 4-1825. A

**Tire**, new BW for Mustang, 6.95x14, \$10. Santa Monica, 309-5413. A

**House**, Spanish stucco, 2 bdrm., dining rm., convertible den, lge. kitchen, breakfast area, service porch, hardwood floors, detached 2-car garage, R-3 lot, near Northrop, \$25,950. P.V., PL 5-4534. A

**Acreeage**, 80 acres, M-1 zoned, in El Mirage, \$400 an acre. Torrance, 378-2198. A

**Desk** 24" x 48" steel, 3 lockable drawers, one center drawer, matching swivel chair, \$90. Los Alamitos, 596-0521. A

**Dining Room Set**, 6 chairs, \$20. San Pedro, 833-3826. A

**Trailer**, 15 ft. Traveleze, sleeps six, 20 gal. water tank, 50 lb. icebox, stove w/oven, electric brakes, toilet facilities, \$795. Gardena, 324-1593. A

**Golf Clubs**, matched, bag and cart, \$75. Torrance, 537-0406. A

**Gas Stove**, O'Keefe & Merritt, 1952, \$35. Torrance, 328-3868. A

**Lawnmower**, power, reel-type, Sears, \$65. Torrance, 370-6734. A

**Acreeage**, 2½ acres, near Willow Springs, \$17,50 down and \$17,50 per month, full price \$1,750. Torrance, FR 8-1026. A

**Transmitter**, Heathkit DX100B w/SB10 side-band exciter, \$75. Torrance, 327-5431. A

**Guitar**, Fender XII, mother of pearl inlay, 12 strings, \$300. Hawthorne, 326-6195. A

**Oldsmobile**, 1964, F-85, 2-dr. coupe, 330 cu. in., auto-trans., p/s, air cond., body & interior good, \$1,050. So. Pasadena, 793-5456. A

**Chevelle S.S.**, 1965, 300 h.p., 4-spd. posi-trac., p/s, AM-FM, fac-tach., yellow exterior, black interior, wire wheel caps, \$2,100. Torrance, 370-0970 after 5:30. A

**Thunderbird**, 1962, fully equipped, exceptionally clean, white w/black int., \$1,300. Mission Viejo, 330-2835. A

**Volkswagen**, 1966, 1600 squareback, dash rack and rear deck cover, \$1,825. Redondo Bch., 672-7424. A

**Porsche**, 1959, 1600 coupe, good tires, silver w/black int., \$1,600. L.A., 657-6964. A

**Thunderbird**, 1962, r/h, bronze color, \$900. L.A., GR 2-1474. A

**MGA**, 1959, hardtop sports coupe, excellent condition, \$795. Manhattan Bch., 545-6477. A

**MGA**, 1960, excellent condition, \$650. Lynwood, 631-3841. A

For Sale

**Plymouth**, 1966, sport Fury, V-8 383 cu. in., auto trans., p/s, p/b, r/h, vinyl roof, stereo tape, console, 13,000 miles, \$2,200. Gardena, 323-1663. A

**Mercury Comet**, 1961, 4-dr. sedan, excellent condition throughout, one owner, \$600. Inglewood, 753-7484. A

**Hillman-Minx**, 1961, 4-dr. transportation car, 4-spd. transmission, \$145. Inglewood, OR 1-8401. A

**Ford**, 1957, or Chevrolet, 1953, spare parts convert automatic to stick shift. Either car, \$75. Inglewood, 755-1071. A

**Cougar**, 1967, super, 1,800 miles, cardinal red, black top, \$2,995. Redondo Bch., 375-7265. A

**Shelby**, 1967, GT500, p/s, p/b, only 5,500 mi., like new, lite blue, \$4,850. Inglewood, 754-8219. A

**Chevrolet Wagon**, 1964, auto. trans., p/s, good condition, \$1,599. Torrance, 675-7739 after 5:00. A

**Chevrolet**, 1960, Impala conv., light blue & white, matching interior, p/s, auto., V-8, \$400. Hawthorne, after 5 p.m., 644-6708. A

**Buick**, 1960, Le Sabre, good shape, \$500. Inglewood, 671-9598. A

**Oldsmobile 98**, 1955, 4-dr. hardtop, full power, air, \$100. Inglewood, FR 9-8275. A

**Chevrolet**, 1964, Impala, super sports, b/seats, tinted glass, p/s, red int., beige ext., \$1,550. Inglewood, 672-5215. A

**Corvaire**, 1962, Monza, 4-speed, \$500. Gardena, 327-7411. A

**MG 1100**, 1964, sport sedan, r/h, w/s/w, \$615. Long Bch., 434-0124. A

**A-Healey**, 1960, 4 seater, new clutch, trans. and o/d, wire wheels, Firestone Indy's, soft top, tonneau, \$1,050. Huntington Bch., 714-536-6469. A

**Volvo**, 1958, r/h, stereo, good paint, new tires, \$350. Inglewood, 645-7900. A

**Chevelle**, 1966, 283 cu. in., marina blue, black vinyl top, black int., stereo, red line tires, auto., p/s, \$2,400. Torrance, DA 9-4894. A

**MG-TC**, 1948, needs paint job, has completely overhauled engine, good tires and body, \$1,395. Littlerock, 805-944-2678. A

**Cadillac**, 1957, sedan, excellent transportation, \$350. L.A., OR 0-2098. A

**Aquarium**, 20 gal., w/lge. tropical fish, gravel, filter, pump, plants, underwater scenery, \$50. Inglewood, 671-8105. A

**Saxophone**, Buescher tenor, low pitch, completely rebuilt, \$275. Gardena, 644-2939. A

**Mustang**, 1966, hardtop, V-8, standard trans., r/h, \$1,750. Torrance, 375-0165. A

**Motorcycle**, Yamaha, 305 cc, 1967, 2,400 miles, \$600. Garden Grove, 714-539-9339. A

**Vacuum Cleaner**, Hoover upright, \$25. Gardena, 675-2331. A

**House**, 3-bdrm., 1¼ baths, family rm., bltins, 1550 sq. ft., \$27,500. North Torrance, 323-6018. A

**Hospital Bed**, & mattress, \$50. Lawndale, FR 0-1741. A

**Pontiac**, '64 Grand Prix, p/s, r/h, b/seats, \$1,595. Inglewood, 674-5953. A

**Home Bar**, maple, "L" shape, 3 matching stools w/back, \$150. Fountain Valley, 714-968-2623. A

**Typewriter**, portable, carrying case, needs repair, \$40. P.V. Pen., 547-4689. A

**35mm Camera**, Petri model 75 w/f1.8 lens, wide angle lens, telephoto lens, sun filter, sun guard, cases, \$110. Hawthorne, 679-1515. A

**Airplane**, Aero-Commander 520, 6-7 place, w/radio-auto pilot-approach coupler & alt. hold, licensed to 9-68, \$17,500. Harbor City, 376-5000. A

**Sliding Doors** for wardrobe cabinet or closet, complete w/hardware, 2 sets, \$4 per set. Hawthorne, 675-8813. A

**Utility Trailer**, all metal enclosed, 5½' x 8' x 6', licensed for 1967, \$125. Inglewood, 677-4159. A

**Bedroom Set**, maple, twin beds, double dresser & mirror, nite stand, \$45. L.A., 294-2975. A

**House**, 1¼ bath, 3 bdrm., block wall, sprinklers, cpts., range, walk Nortronics Hawthorne, \$23,950. Gardena, Box 2206. A

**Sailboat**, 12' Kite, #225, trailer, racing sail, \$700. Torrance, 378-6675. A

**Surfboard**, yellow, w/redwood, used little, \$75. Torrance, 326-3905. A

**Bed Frame**, maple, with head and foot board, \$25. Hermosa Bch., 372-6755. A

**Car Bed**, blue vinyl, folding, detachable rockers and car seat attachment, \$4. P.V. Pen., 377-7156. A

**Crib and Mattress**, Lullaby, 6-year crib, \$10. Torrance, 375-4312. A

**House**, Holly Park, 3-bdrm., den, paneled family room, stone fireplace, 2 baths, hardwood floor, patio, block fence, many extras, \$28,300. Gardena, 321-6973. A

**Motor Scooter**, 1967, Vespa, 150 cc, paid \$540; \$250. Hawthorne, 675-9681. A

**Porsche**, 1959, 1600 super, coral red, p/b, radio, chrome wheels, new tires, new motor, \$1,700. Bell, 589-2259. A

**Mimeograph Machine**, power driven w/steel cabinet, A. B. Dick model 92, \$90. Redondo Bch., 370-7092. A

**Chevrolet**, 1956, Bel Air, good condition, \$250. Rolling Hills Ests., 326-3438. A

**Bicycle**, girl's 26", in very good condition, \$25. Gardena, 329-4200. A

**Typewriter**, Remington portable, \$25. Rolling Hills Ests., 375-8778. A

**Cemetery Lots**, two, in Pacific Slope section of Inglewood Park, double interment. 20 per cent below market value, \$1,700. Redondo Bch., 370-7526. A

For Sale

**Chevrolet**, 1956, Bel Air, 2-dr., hard top, V-8, automatic, good tires, \$200. Lawndale, 674-6409. A

**Twin Beds**, mattress, box springs, roller frame, \$15. Manhattan Bch., 379-3487. A

**Chrysler Imperial**, 1964, blue w/white top, 2-dr. hardtop, a/c, p/w, p/s, p/a, leather int., AM-FM radio w/reverberator, new tires, \$2,575, will finance. L.A., 670-6084. A

**Ford**, '64 Fairlane, 3-spd., r/h, 36,000 miles, \$850. L.A., 641-0562. A

**Boat**, 16' glass over wood, 75 h.p. motor, trailer, cover, 5 life jackets, accessories, \$750. Hawthorne, 679-2041. A

**Ford**, '65 Country Squire, 10 pass., p/s, p/b, a/c, \$2,350. P.V., 377-9723. A

**TV**, Magnavox, 21" console, maple, b&w, \$35. Hawthorne, OS 6-8760. A

**Buick**, 1955 Century, 4-dr. hard top, auto. trans., p/b, r/h, \$150. P.V., 377-7448. A

**Bicycle**, 26" boy's or man's, 3-spd. \$22. Westchester, 645-9614. A

**Mattress**, w/out box spring, never used, 15-year guarantee, \$40. Redondo Bch., 370-9795. A

**Ski Boat**, 12' 6", 40 h.p. Mercury eng., elec. start., Heco trailer, \$450. Buena Park, 714-828-8439. A

**Tires**, 4, 8.50x14 premium, several thousand miles left, \$5 ea. Garden Grove, 714-539-3925. A

**Dining Room Set**, Danish modern, walnut, w/6 white Naugahyde chairs, \$125. Manhattan Bch., 545-4268. A

**Crib**, w/spring & Kantwet mattress, \$10. Rolling Hills Ests., 378-2190. A

**Bed**, dble., cherry finish, incl. box springs & mattress, \$40. Torrance, 378-6824. A

**Communications Receiver**, HRO-60, complete Central Electronics Model B sideband slicer, loudspeaker & 100-cc crystal calibrator, \$200. Granada Hills, 363-0185. A

**Picnic Table**, redwood, 8', detached nesting benches, \$25. Torrance, 323-4209. A

**Oldsmobile**, 1966 Cutlass, 2-dr. sport coupe, full power, factory air, console, b/seats, 18,000 miles, \$2,550. Granada Hills, 360-5029. A

**Tape Recorder**, Sony 300 stereo, play or record, 2-track & 4-track, bltin amps. & speakers, orig. cost \$400; \$165. Hermosa Bch., 372-6556. A

**Slip Lot**, Salton Sea, for house & separate boat dock on channel, roads & utilities in, south side of sea in Riviera Keys, \$7,100. Anaheim, 714-535-1694. A

**Pickup**, 1964 Chev. ½-ton, V-8, auto., custom cab, r/h, 6-ply tires, \$1,095. Orange, 714-633-3788. A

**Chevrolet**, 1963 Impala, p/b, p/s, 409 auto., tach., hv. duty susp., \$1,100. Hawthorne, 676-2347. A

**Lots**, Lake Isabella, rural, lake view, 60' x 100' or 120' x 100', low dn., \$1,650. Gardena, 323-4329, 373-1932. A

**Spring & mattress**, dble., cost \$180; \$50. Torrance, 320-4697. A

**Chevrolet**, 1965 Impala S.S., 396, r/h, p/s, w/s/w, b/seats, \$1,899. L.A., 566-7378. A

**Boat**, 14' 6" Healy, natural wood deck, 35 h.p. Mercury, small whl. trailer, spare tire, extras, \$695. Huntington Bch., 714-842-1733. A

**Ford**, Model A, 1930 Victoria, '38 running gear, needs eng. work, \$500. Inglewood, 672-6794. A

**Trailer Hitch**, 5th wheel for semi-truck tractor, \$20. Manhattan Bch., 377-1075. A

**Monza**, Corvaire, 1962, 4-spd., \$500. Gardena, 327-4115. A

Wanted to Buy

**Relaxacisor**, in good condition, reasonable price. P.V., 377-5084. B

**.45 Colt**, automatic, excellent or very good, only. Torrance, FR 5-4312. B

**Swing Set**, child's, Hawthorne, 679-2610. B

**High Chair**, in good condition, \$10. Redondo Bch., 324-7318. B

**Transportation Car**, reasonable, foreign or American. Malibu, Box 2205. B

**Cabin**, desert or mountain. Inglewood, Box 2204. B

**Camper Equipment**, incl. gas tank, stove, refrig. or ice box, lights. Torrance, FR 5-8804. B

**Rocking Horse** in good condition, Gardena, 324-6703. B

**VW chassis** and engine or dune buggy, 1961 or newer. Rolling Hills Ests., FR 5-8536. B

Free (To Be Given Away)

**Booklet**, Computer Careers. Baldwin Pk., 426-9381. D

**Puppies**, Beagle-Terrier mix, 6 wks. old. Hawthorne, 676-5186. D

**Redwood Fence**, 100 feet, take down, haul away. 675-3423 after 8 p.m. D

Rentals Offered

**Duplex**, 2-bdrm. w/carport, fenced yard, remodeled kitchen, unfurn., water, trash paid, walk to Northrop, \$110 mo. Hawthorne, 676-3050. E

**House**, 3 bdrms., den, pool, Hermosa Beach, \$200. Hermosa Bch., FR 9-6467. E

**Apt**, 1 bdrm., unfurn., garage, Inglewood area, \$80 mo. Inglewood, OR 2-3150. E

**Apt**, refrig., stove, disposal, near beach, \$90. Manhattan Bch., FR 2-7075. E

**House**, 3-bdrm., 1 bath, cpts., bltins, gar., lge. fenced yard, references, \$190 mo. Manhattan Bch., FR 6-4677. E

**Apt**, 2 bdrm., furn., lge. pool & patio, closed garage, near El Camino, adults, \$160. Torrance, 324-8373. E

Rides and Riders

Rides Wanted

7 a.m. — 3:42 p.m.

**West San Fernando Valley** to Norair. J. Rizzotti, Norair, ext. 2033.

**From Downey, Imperial & Lakewood**, Morris Brown, Norair, 5121, Topaz 1-8508.

**Torrance, Pacific Coast Highway & Crenshaw** to Plant 3. Margaret Wilson, Norair, ext. 2905, 326-8037.

7:30 a.m. — 4:12 p.m.

**From Huntington Beach** to & from Mariposa. Joseph Nester, Norair, ext. 4181, 644-3263.

**Encino**, White Oak and Topham. Can meet at freeway and White Oak on-off ramp or Tarzana, Encino, Reseda area. Linnell Anderson, Norair, ext. 1676, Encino, DI 2-7565.

**From Granada Hills**, Aaron L. Currier, Norair, ext. 2015, 360-5029.

8 a.m. — 4:45 p.m.

**From City of Orange**, Chapman and Tustin, to Plant 3. Curt Rhodes, Norair, ext. 4414, 714-639-1462.

Rides Offered

7:30 a.m. — 4:12 p.m.

**Encino**, White Oak and Topham. Can meet at freeway and White Oak on-off ramp or Tarzana, Encino, Reseda area. Linnell Anderson, Norair, ext. 1676, Encino, DI 2-7565.

**From Granada Hills**, Aaron L. Currier, Norair, ext. 2015, 360-5029.

Rentals Offered

**Apt**, 2 bdrm., unfurn., disposal, water, trash paid, garage, fenced yard, near Norair, \$100 mo. Hawthorne, 325-5705. E

**Apt**, 1-bdrm., furn., bltins, on strand, \$160 mo. Manhattan Bch., 376-9392. E

**Apt**, deluxe, 2-bdrm., unfurn., cpts., dps., bltins, lge. pool, closed gar, near El Camino, adults, no pets, \$125. Torrance, 324-8373. E

**Apt**, 2-bdrm., cpts., dps., bltins., disp., soundproofed, closed gar., 5 minutes to Nort. P.V., 15 minutes to Norair, \$120 unfurn., \$140 furn. Torrance, 375-2091, 375-9397. E

**Apt**, 1-bdrm., furn., very pvt., w/all bltins, pvt. deck, lge. pool, subt. pkgng., near Norair, \$150. Lawndale, 679-2117. E

**House**, 1-bdrm, unfurn., five minutes to Norair, adults, no pets, \$90. Inglewood, OR 1-2776. E

**Apt**, 2-bdrm. duplex, cpts. & dps., bltin pullman bath, bltin stor. cabinets, closed gar., near El Camino, 2 small children OK, \$130. Cypress, 714-826-6744. E

Rentals Wanted

**Cabin** for 5, in mountains, Dec. 23, 24, 25th, prefer Big Bear area. Hawthorne, 676-6122. F

**Furnished Room**, w/pvt. bath, single man, near Norair. Box 2203. F

**Room**, in pvt. home w/without private bath, no kitchen. Box 2202. F

Lost

**Golf Putter**, 10/14/67 at Singing Hills, reward. Inglewood, OR 1-2667. J

Personals

We wish to express our appreciation for the wedding gift. WOODY & JEAN SHERWOOD. L

I would like to express my warm thanks and appreciation to my friends and co-workers for their cards and well wishes during my hospital confinement. WILLIAM L. BARNES. L

Sincere thanks for all the nice letters and condolences offered at the death of my wife, Thelma Rotte. RENE ROTTE AND FAMILY. L

For Sale or Trade

**Wall Heater**, \$35 or trade for 10-25K BTU garage heater. Long Bch., 596-3691. M



## Employees Participate In Training Sessions

It was "back to school" recently for a group of 43 key Northrop men who took part in a special sales training course held at the Edgewater Inn, Seal Beach.

The instructor was J. Douglas Edwards, noted sales and marketing analyst and teacher.

Vic Bray, director of Marketing, NSL, and Stan Pine, Training administrator, set up arrangements for the course, one of a series of annual classes held for this purpose.

Taking part were men from

Northrop's Corporate Field Office, plus all elements of Northrop Nortronics, including one man from the Precision Products Department.

During the four full days of classes, the students were given precise training in better understanding the customer and his problems. Individual teams were formed among the students to carry out special projects and sales efforts. Points were awarded teams and individuals.

Final point tabulations showed A. L. Valdez, a Navigation department senior engineer, with the greatest number of points, followed in order by C. C. Cook, Lloyd Jensen, D. B. Daniel, N. Hauft, John Landers, S. R. Droy and R. E. Miller.

Taking part, in addition to the prize winners, were W. J. Oakes, D. P. Henderson, C. M. Tompkins, R. Bruce, W. D. DeRepenigny, C. E. Banik, R. T. Crane, Leroy Kaufold, J. B. Mariner, J. Muller, E. Rafnel, A. G. Taie, L. C. Martindale, A. W. Brock, H. Frankenberg, V. M. Wilson, P. B. Hannah, L. A. Jones, A. B. Lipscomb, R. D. Bates, R. L. Veloz, Ted Parker, D. D. Moss, K. R. Colson, B. O. Davis, J. E. Palmer, C. J. Rusling, jr., W. L. Hahn, Lyle Rennick, A. D. Nelson, J. A. Syettler, J. McCarty, and W. C. Harkins.

## Faranda Joins Hallicrafters

Paul Faranda, veteran Personnel administrator at Nortronics Anaheim, has transferred to Hallicrafters, Inc., as head of Industrial Relations. He will report to Harrison Van Aken, Hallicrafters president.

Richard Stuffer replaces Mr. Faranda as chief of Personnel Administration. Mr. Stuffer is a 1960 Loyola University of Los Angeles graduate.

Replacing Mr. Stuffer as supervisor of Employee Relations at Anaheim is Ken Terry, a graduate of Ohio Wesleyan University, and former member of the Employee Relations staff at Nortronics Hawthorne.



'41 FOR FREEDOM' — Northrop officials receive the U.S. Navy's "41 for Freedom" Award, signifying outstanding performance on the Fleet Ballistic Missile Program. From left are Richard Nolan, Corporate senior vice president, Manufacturing and Administration; Frank

Lynch, Nortronics vice president and Anaheim manager; Len McKenna of Lockheed Missiles and Space Company; and Ralph Dix, Nortronics Polaris/Poseidon program manager. Mr. McKenna presented the award on behalf of the Navy. Lockheed is program's prime contractor.

## SUGGESTION PLAN

### Sixteen 'Harvest' Awards

October is harvest time across the land, even at Northrop Nortronics.

Last month 16 employees "harvested" a total of \$1,305.82 in payment for constructive ideas they had sown earlier.

They did it through the Employee Suggestion Award Plan which pays cash for ideas that help Nortronics save time and materials or improve safe working conditions.

Employee Suggestion Award winners represent nearly all of Nortronics' West Coast operations.

Individual awards ranged from a low of \$16.43 to a high of \$425.90.

The latter award was shared by Lester Lauck and Robert Wilson of Nortronics Hawthorne. It was payment for a new technique involving jackets which fit over electronic cable assemblies.

Thomas Blake of Nortronics Anaheim also won an impressive award of \$175.20. He perfected a means of mounting a scale aboard a fork lift for use in ordnance operations which called for weighing certain elements.

Mary Strickland, also of Nortronics Anaheim, won \$150 for an idea involving a unique little hand tool. She modified a screwdriver to hold nuts that have a way of dropping down into close quarters during electronic assembly operations.

Other successful Employee Suggestion Award winners for the month were Jerome Riley, Jessie Michini, E. P. Wachsman, Arthur Bovee, Richard Hollenbeck, J. A. Brandyberry, James McIntyre, jr., Don Bacon, Richard Fenstermacher, Theodore Stec, Brint Bjorklund and Mary Furcron.

## NRC Clubs Plan Annual Elections

Northrop Recreation Clubs which serve Norair and Nortronics Hawthorne-Palos Verdes are selecting NRC commissioners and executive officers for their activities.

Election dates for each club are now posted on bulletin boards.

Annual NRC elections will be held November 11.

## Registration Begins for Tournament

The entry lists are open for the 14th annual Northrop Corporation Christmas Bowling Tournament, to be held December 9 and 10 in Gardena.

Tournament play will be held at 11:30 a.m., 2 p.m. and 4:30 p.m. on December 9, and 10:30 a.m., 1 p.m. and 3:30 p.m. December 10, at the Missile Bowl, 1280 W. Redondo Beach Blvd. The five events are men's singles, women's singles, men's doubles, women's doubles and mixed doubles. Trophies and cash prizes will be awarded in each division.

The entry fee is \$2.65 per event, of which \$1.65 is allocated for bowling fees, and the other \$1 for prizes. Bowlers may enter as many events as they wish.

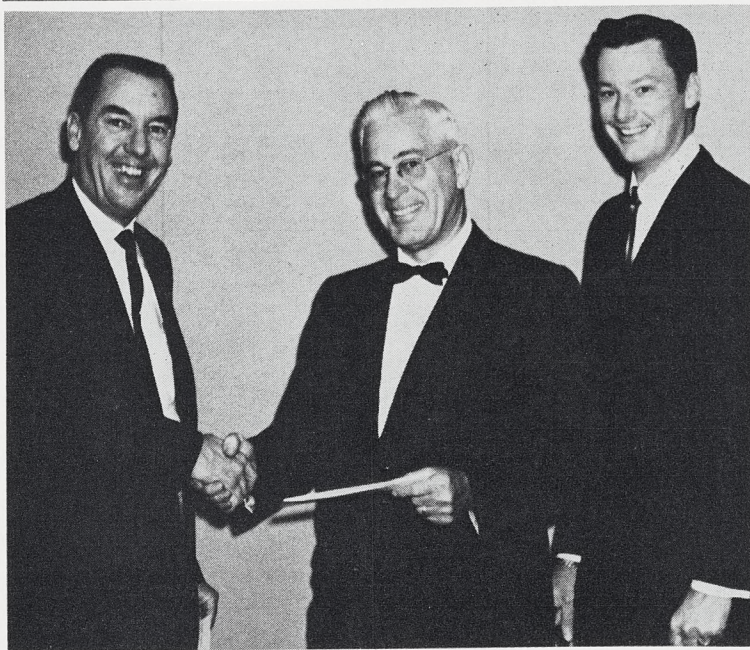
Deadline for entering is November 22. Entry forms and rules are available in Personnel Activities offices or Industrial Relations offices. Additional information may be obtained by contacting Bill Myerson, Norair Bowling Club commissioner, on ext. 4257; Bob Arrasmith, Nortronics Bowling Club commissioner, on Nortronics Hawthorne ext. 656; or Kathy Miller, Ventura Recreation Services clerk, on ext. 435.

Play is open to all Northrop employees.

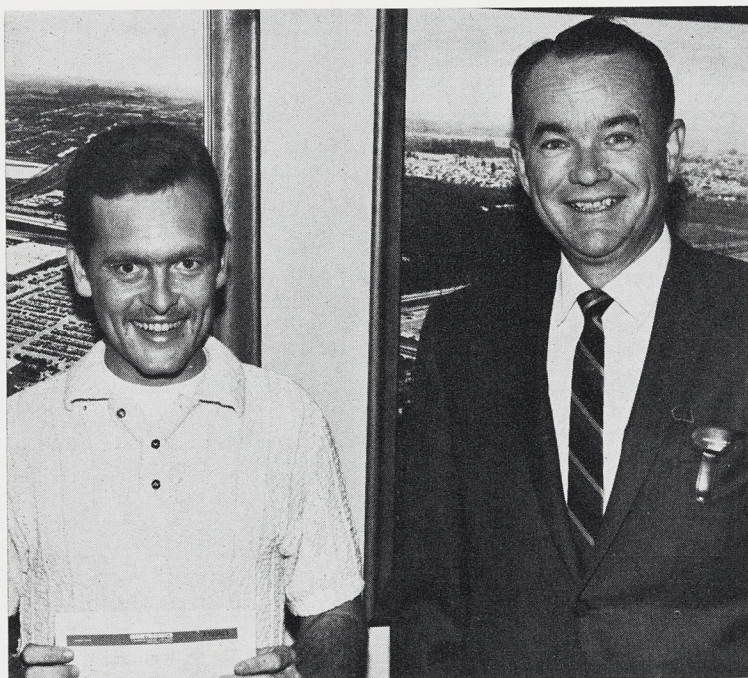
## ANNUAL DINNER

(Continued from page 1)

the Quarter Century Club this year were James C. Anderson, Maxine H. Berdan, William E. Brooner, Harry W. Clark, jr., Herbert E. Farrington, Walter F. Gray, Lynn W. Kauffold, Russell E. Lavvorn, William H. Cozad, Walter M. Clark, Robert C. Foley, Donald E. Hannum, Laurence J. Knight, Dean J. Madsen, Frank C. McGinley, Stella M. Murray, Ronald T. Richards, E. Clayton Tait, Leonard G. Maurer, Frank W. McNabb, Helen B. Patapoff, John P. Superata, Marvin W. Wiebe, Harry E. Belcher, Ralph G. Brant, Everett F. Burgmaier and Emil Kalthoff.



IMPROVED CABLE JACKET suggested by Lester Lauck (center) and Robert Wilson (right) at Nortronics Hawthorne led to payment of a \$425 Employee Suggestion Award they shared jointly. Making the check presentation is Leroy Kaufold.



FOR A MOBILE SCALE UNIT—Thomas Blake of Nortronics holds \$175 Suggestion Award check for idea on use of scale unit mounted on fork lift for utilization in ordnance operations. He received check from D. A. McInnis (right).



A NEW TOOL suggested by Mary Strickland will help prevent loss of small bolts in complicated electronic assemblies at Nortronics. Mrs. Strickland shows her chief, Cy Seeley, the \$150 Suggestion Award check she received for the idea.



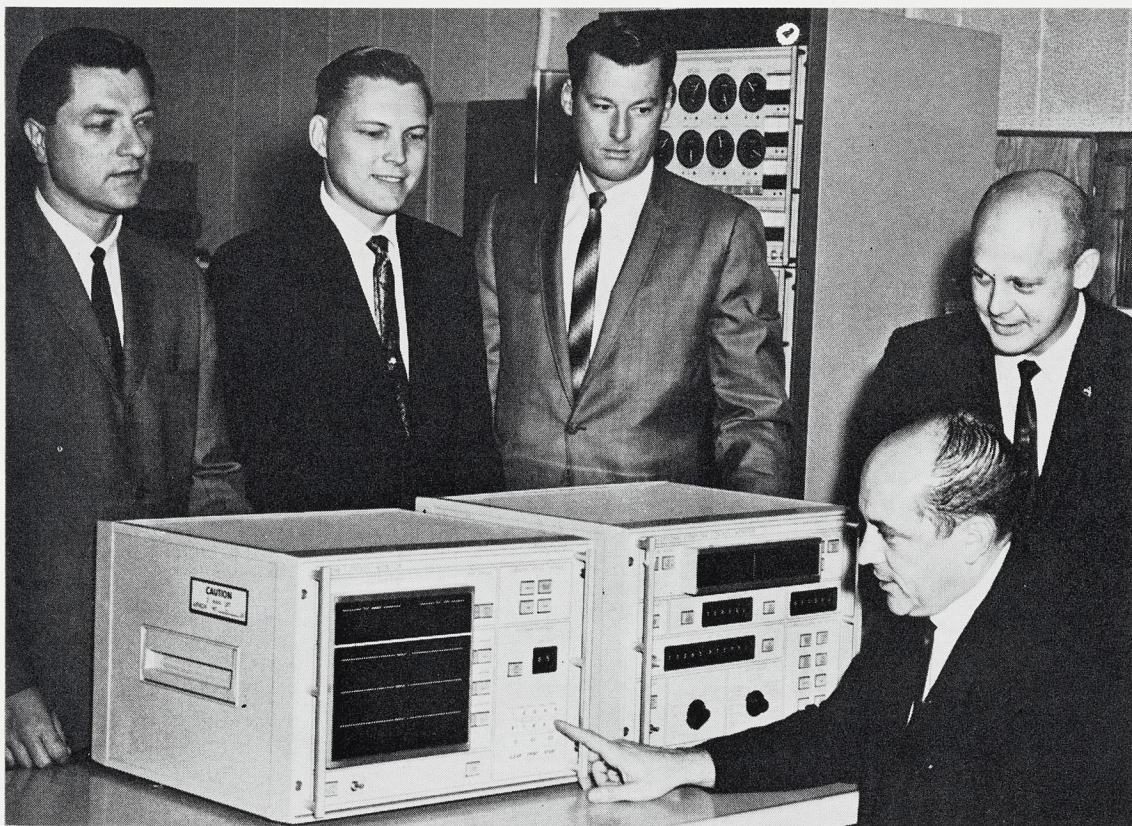
# NORTHROP NEWS

NORTHROP NORTRONICS

Published biweekly by Northrop Corporation, Beverly Hills, California

Vol. 25, No. 23

November 22, 1967



SOME FROM AMONG MANY who have contributed to the success of the C-5 IDNE AGE Program are (from left) Ron Schwartz, appearance and human engineering; Ed Grey, development lead engineer; Bob Wilson, mechanical design lead engineer; and Tom Daggett, systems support equipment supervisor. Seated at the IDNE and Navigational Computer Control-Monitors is Jay Albrecht, development lead engineer.

chanical design lead engineer; and Tom Daggett, systems support equipment supervisor. Seated at the IDNE and Navigational Computer Control-Monitors is Jay Albrecht, development lead engineer.

## Navigation Equipment Delivery Scheduled

Delivery to Lockheed-Georgia by Nortronics Hawthorne of nine additional items of C-5 Inertial-Doppler Navigation Equipment (IDNE), specifically the Aerospace Ground Equipment (AGE), is scheduled for this month.

The Nortronics support equipment thus far received by Lockheed-Georgia has received praise from Lockheed's D. D. Babcock, group engineer for the C-5's Guidance Subsystem group.

In referring to the previously delivered equipment, Mr. Babcock said, "Lockheed-Georgia Engineering has found the test equipment manufactured by Nortronics to be functionally and electronically well designed. It is felt that the equipment will prove to be extremely valuable to the using organizations."

The AGE units being readied for delivery will, according to Milt Sumner, deputy program manager, "enable Lockheed to perform many of the necessary tests and evaluations of the C-5 IDNE airborne equipment delivered earlier."

Many of the items delivered to date are components of the major items of C-5 AGE; the IDNE Test Set, AGE Card Test Set, and the Portable Programmer.

Supervisor of Systems Support Equipment, Tom Daggett, explains that the IDNE Test Set is the nucleus of the essential C-5 ground support equipment.

According to Mr. Daggett, the test set "is a unique step forward in the field of support equipment." It is designed to detect malfunctions down to removable - and -replaceable subassemblies within each separate Line Replaceable Unit of the C-5 IDNE airborne equipment.

"However," Mr. Daggett continued, "where most test sets rely largely on manual operation through a long step-by-step test procedure, the IDNE Test Set is designed to perform its check-out and malfunction - detection

task automatically." At the heart of the IDNE Test Set is a Nortronics designed-and-built computer identical to the Primary Computer used in the C-5 airborne navigation system. When properly programmed, the computer allows the IDNE Test Set to perform its test and evaluation.

(See C-5, page 6)

## Apollo's Success Gives New Life To Moon Hopes

America's drive toward the moon thundered with new life recently when Apollo IV, aboard a towering three-stage Saturn V launch booster, lifted away from its Cape Kennedy launch pad.

Eight hours and 38 minutes later, the spacecraft floated gently beneath its Northrop-built parachute landing system to a touchdown in the Pacific Ocean near Midway Island. The landing occurred only six miles from the aircraft carrier Bennington stationed for the recovery.

During those 8½ hours, the nation witnessed one of the most perfect flights ever completed in the manned space program, a flight which tested re-entry and landing from speeds which exceeded the 25,000 mile-per-hour velocity with which a spacecraft actually will return from the moon. Officials said the entering velocity was approximately 300 feet-per-second faster than the 36,000 fps to be encountered in a lunar return mission.

After working long months under the shadow of last January's fiery disaster which took the lives of three astronauts, hundreds of officials and engineers from industry and the National Aeronautics and Space Administration gathered at the Cape for the November 9 Apollo IV flight. It was with almost disbelief that they

(See APOLLO, page 6)

## 1968 PRESIDENTS

### NRC Councils Elect Kieffer, Paramore

Bill Kieffer at Anaheim and Dick Paramore at Hawthorne-Palos Verdes will head Northrop Recreation Clubs serving Northrop Nortronics personnel for the coming year.

Election of these and other officers came at the November 11 meeting of NRC Councils.

Serving with Mr. Kieffer at Anaheim will be Vito DePaul,

vice president; Maxine Hopper, secretary; Norma Hoag, treasurer; and Roy Steinestel, sergeant-at-arms.

President Paramore will be assisted by Joe Kalina, vice president; Paula Gardner, secretary; Bill McNair, sergeant-at-arms; and Kevin McAloon, treasurer.

Mr. Paramore, general supervisor of the Engineering Support group at Palos Verdes, is a Northrop 21-year veteran. He has been active in NRC since 1964 as commissioner of the Sea Anglers, a NRC treasurer and during the past year as NRC president.

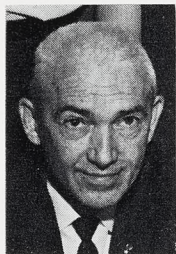
Mr. Kalina, also a Northrop 21-year veteran, is a coordinator in Proposal Design at Hawthorne. He was president of NRC in 1964-65 and at one time was

NRC president at Norair's Torrance facility. He has served on many Special Events Committees and other groups during his 19 years of service to recreation at Northrop.

Paula Gardner, senior administrative secretary at Palos Verdes, has worked for Northrop over 12 years. She has served NRC for six years, including three years as bowling commissioner and other terms as a representative-at-large.

Mr. McNair is a manufacturing methods analyst in Manufacturing Engineering at Hawthorne and an 11-year Northrop veteran. He was a representative in 1966 and commissioner of the NRC Weight Lifters in 1967.

(See COUNCILS, page 6)



Mr. Kieffer



Mr. Paramore

## ORANGE COUNTY FIRE

### Engineer's Home Destroyed

Flames raced through the Santa Ana Canyon in the recent Orange County fire and took with them the house and nearly all the personal belongings of a Nortronics employee.

In the early morning hours of October 30, police sirens screamed up the Canyon, rousing residents from their sleep with the order to evacuate. Some stayed to water down their roofs and hoped for the best. But, looking across the ridge to the oncoming disaster, Mr. and Mrs. Bert Millspaugh and their six children could feel the heat from the flames as their eyes smarted from the smoke. The decision to leave immediately, with only the clothing they could wear or carry in the family car, proved wise. Thirty minutes later, their house was burning. Before noon it was gone.

When the fire lines were down, the Millspaugh's returned to survey the ruins and found a chimney where once a modern three-bedroom ranch house had stood. On viewing the charred debris, Mr. Millspaugh was "filled with disbelief that I could have lost it all." His wife, Barbara, cried. Later, their youngest son, Rusty, scattered the ashes, searching hopelessly for his kindergarten library book; while 12-year-old Margaret was dismayed at the loss of her first pair of fishnet stockings.

But the real story of this tragedy is not that the eight Millspaugh's lost so much; it is of what they gained.

With the cinders still smoldering, and before the smoke had lifted, NORAD had sprung to action with emergency assistance

(See FIRE, page 6)



AFTER THE FIRE—This is all that remained of the three-bedroom home of Nortronics Anaheim's Bert Millspaugh, after fire swept through the Santa Ana Canyon in Orange County. The

Millspaugh's plan to build another house on the same site. They left the house only 30 minutes before the fire reached it, in response to evacuation order from police.



## Harry Stokes: Track Coach In Guatemala

**EDITOR'S NOTE** — The following story was written by Harry Stokes, a Page Communications technician assigned to the Latin American Communications System site in Guatemala City. Mr. Stokes, a former collegiate middle distance runner, coached the Guatemalan track team this year in his spare time. He since has been transferred to Page's Washington, D.C. office, and has been named senior technician in Research and Development. Page is a subsidiary of Northrop.

I guess it all started when I went out to the stadium in March, just to have a workout. As it turned out, I didn't have much of a workout, but spent most of my time talking with the Guatemala track team coach. Before I left, I had agreed to give a couple of clinics on American coaching methods.

After the first clinic, I was asked if I would help some of the athletes in their training. The team only had one coach, and he was part-time. He had never competed in track himself, and asked if I would lend a hand.

This, in essence, is how I got started in coaching. The team consists of about 60 athletes; approximately 45 boys and 15 girls. At present, I work primarily with the boys and girls who compete in the running events.

Our team really progressed during the season. We defeated a strong, heavily favored Panama team to win the third annual Central American Championships. Guatemala had 109 points, and Panama had 44.

In the victory, Guatemala set 19 new Central American records. The men's team had 13 of these, and the women's squad had six. The Most Outstanding Athlete Award, in both men's and women's divisions, also was won by Guatemala. This was the first year Guatemala had won the meet.

We then went to Mexico to participate in the Caribbean Games. It was the first time Guatemala had ever taken part in these games, but the team still managed to place fourth, behind a strong contingent from the West Indies.

As for my own background and future aspirations in track and field, I entered the University of Pittsburgh in 1958, and, (See **TRACK COACH**, page 5)



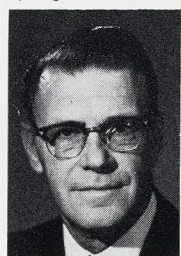
**LEADING THE FIELD**—Eddie Barker of Northrop Ventura drives his Triumph Spitfire to the lead in a sports car championship race held in 1965 at Dodger Stadium. Trailing him are three teammates, also in Spitfires. Mr. Barker went on to win the race, and hopes he can do the same this weekend, when he

competes in the American Road Race of Champions, being held in Daytona, Florida. This will be his final race, as he plans to retire and turn the car over to his son, Jerry. Mr. Barker is a Quality Control group chief at Ventura.

### THANKSGIVING IN FLORIDA

## Ventura's Barker in Championship Race

If Northrop Ventura's Eddie Barker has any Thanksgiving turkey tomorrow, chances are he'll have to eat it between qualifying runs for the American Road



Mr. Barker

Race of Champions, to be held Saturday and Sunday in Daytona, Florida.

Mr. Barker, a Quality Control group chief, doesn't figure to have much free time over the holiday weekend, with registration tomorrow, qualifying and practice on Friday, and the race on Saturday.

He and his Triumph Spitfire have been consistent winners on the West Coast for the past several years. This year, he accumulated more points on the racing circuit than any other driver in his classification, to be named Pacific Coast champion for the

eight time in the past 15 years.

This weekend's race, which brings together champions from the seven regions covered by the Sports Car Club of America (SCCA) in a race for the national championship, has even greater significance for Mr. Barker. It will be his last.

"I think it's about time that I retired," Mr. Barker said last week. "For the past several years, I've done the driving, and my son, Jerry, has been my mechanic and pit man. Starting next year, we'll switch places. Jerry is 20 years old, and has a great natural ability for sports car racing. He'll take over the driving, and I'll work for him."

Mr. Barker joined Northrop in September 1941, and has worked at Norair, Nortronics and Ventura.

His driving career began at the start of the 1953 racing season, when sports car racing was in its infancy in the United States.

The cars were less powerful and less complicated, and races were scarce. Today, a sports car owner in Southern California can find an event to enter virtually every weekend of the year.

Mr. Barker's first competition car was an MG-TD. He later drove the more powerful MG-TF 1500, a Siata, a Porsche Speedster and—since 1963—the Triumph Spitfire, as a member of the Triumph factory team.

Men like Jimmy Clark, A. J. Foyt and Parnelli Jones have earned fortunes in auto racing, but Mr. Barker has never earned more than his expenses. The SCCA is an amateur organization. Drivers receive titles and trophies, but that's all.

And Mr. Barker has received plenty of both. In 1960, his most successful year, he entered eight races and won all of them. For this, he was voted SCCA Pacific Coast Driver of the Year.

In 1964, he won the American Road Race of Champions—the same event he's hoping to capture this weekend—when it was held at Riverside.

A year later, at Sebring, Florida, he and his Triumph teammates finished second in their class. Class, incidentally, is determined by engine capacity. A Triumph, naturally, could not compete in over-all speed with such cars as the much larger and more powerful Maserati or Ferrari.

Mr. Barker's sports car interests haven't been limited to driving. He's been active in the administrative side of the sport, and plans to continue in that field as chairman of the SCCA Car Classification Committee.

In 1957, while a member of the board of governors of the California Sports Car Club, he wrote the rules and regulations (See **EDDIE BARKER**, page 5)

## Transportation, Seats Available For Rose Parade

Special excursion buses to the annual Tournament of Roses Parade in Pasadena will be provided for interested Northrop personnel on a limited first-come, first-serve basis at \$9 per person.

Price of the New Year's Day outing includes round trip transportation and a reserved grandstand seat on the front lawn of Pasadena City College, but does not include admission to the Rose Bowl Game.

Tickets are available only at the Norair Personnel Activities office, extension 2486. Those interested are cautioned to get tickets early, as only 135 have been made available.

Three 45-passenger buses will be ready for boarding at Gate 5 (Plant One cafeteria) at 6:30 a.m., with departure scheduled for 6:55 a.m. Return will be in the early afternoon at Gate 5.

Facilities for light snacks are available near the grandstand.

## Bowling Tourney Entries To Close

Entries close today (November 22) for Northrop's 14th annual Christmas Bowling tournament to be held December 9 and 10 at Missile Bowl, Gardena.

Squad times are 11:30 a.m., 2 and 4:30 p.m. on December 9 and 10:30 a.m., 1 and 3:30 p.m. December 10.

There will be men's and women's singles and doubles competition, plus mixed doubles.

## Drivers' Test Available

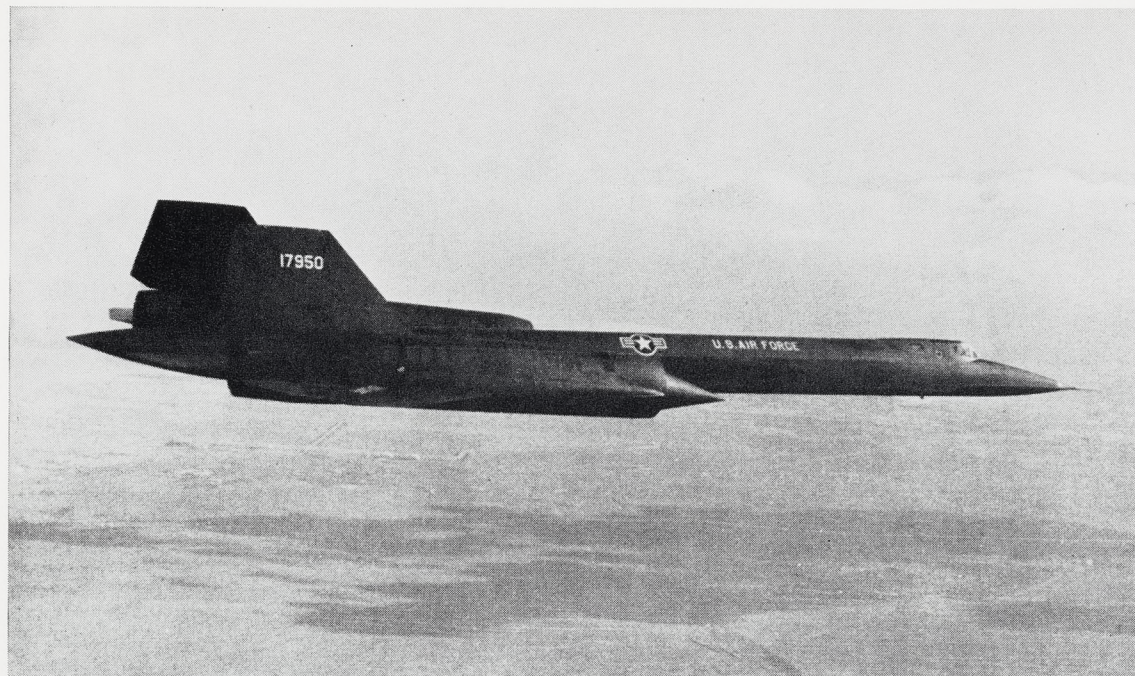
Copies of the 1967 National Drivers' Test to be aired on nationwide television December 5 will be distributed at all Northrop Norair and Nortronics personnel exits late next week.



**'OUR MAN IN GUATEMALA'**—Members of the Guatemalan track team pose with Harry Stokes (extreme left, standing), a Page Communications technician who coached them to

victory in the Central American Championships this year. Mr. Stokes is author of the above article. He since has been transferred to Page's Washington office as a senior technician.





THE SR-71—This is the United States Air Force's SR-71, a long-range strategic reconnaissance airplane for which Northrop Corporation

has provided the astroinertial navigation and guidance system. The system, developed by Northrop, was made operational recently.

## FOR EMPLOYEES' CHILDREN

### Christmas Parties Planned

Three gala Christmas parties for the young at heart of all ages, especially children, will be held at three locations next month under the sponsorship of Northrop Recreation Club.

All will be held on the same day, Sunday, December 17.

The largest event planned is the 27th annual Christmas Party for the sons and daughters and grandchildren of Northrop Norair and Nortronics Hawthorne - Palos Verdes and Corporate office personnel. It will be held at the Shrine Auditorium, Los Angeles.

To accommodate the 13,000 Northrop children and parents expected, this affair has been divided into two giant segments, one to be held at 1 p.m., the other at 4:30 p.m. Each will provide the same entertainment.

For example, there will be big two-hour shows including a special stage production featuring such events as the famed French Poodle Review and ventriloquist Bob Karl. There will also be special cartoon films just for Christmas. And old St. Nick will be on hand to "talk business" with youngsters. Gifts will be provided for children.

Special invitations have been sent to all personnel at the participating facilities and the deadline for submitting these invitations extended until today (No-

vember 22). Those who have returned their requisitions for tickets will soon receive special envelopes containing those tickets, parking tickets and gift tickets for each youngster.

Also on December 17 Northrop Nortronics personnel at Anaheim will gather at the NRC Clubhouse, Fullerton, along with their youngsters to take part in what has become a traditional Christmas event at that facility. There will be gifts, entertainment and surprises galore for party goers there. Naturally, St. Nick will make his annual appearance to chat with youngsters.

The third party is scheduled for 1 to 5 p.m. at the Sage School, Palmdale, for all Palmdale, Edwards Air Force Base and JPL/Edwards children. There will be games, movies, gifts and a visit by Santa Claus.

### Annual Report Available

Would you like to have a copy of Northrop's 1967 annual report to shareholders?

As long as the supply lasts, you can obtain a copy of the report by applying to the Personnel Activities office at Norair, or the Industrial Relations offices at Nortronics Palos Verdes, Anaheim and Hawthorne, and Northrop Ventura.

### 'Flow' Paper Accepted for Presentation

"Electro-aerodynamics in Supersonic Flow," a paper prepared by M. S. Cahn and Dr. G. M. Andrew, has been accepted for presentation at the sixth annual Aerospace Sciences Meeting, to be held in New York in January.

The authors are research engineers in Northrop Norair's Applied Aerodynamics and Performance branch of Research and Technology. Their paper will be given before a session on Atmospheric Flight Mechanics at the January 22 through 24 meeting.

In the paper, it is explained that the term electro-aerodynamics is applied to the flow of electrically charged fluid in the presence of an electrostatic field.

The electric forces between charged particles of fluid propagate with the speed of light. This is significant because, in supersonic flow where the pressure signals fail, the speed allows signals to be sent ahead of obstacles, warning the particles of fluid. It was demonstrated in experiments that the patterns of supersonic flow change because of the electric signals. Using a very sensitive balance, the men discovered that drag also is effected when a fluid is electrically charged. Thus it is hoped that the shocks of supersonic flow become less severe because of the electric warning signals.

Dr. Andrew and Mr. Kahn said the discovery may have applications in sonic boom research.

\* \* \*

Three Northrop men—U. H. Montgomery and W. W. Westcott of Norair Flight Safety, and E. F. Ebricht of Norair Human Factors—will participate next week in a panel discussion on In-flight Egress, at an Air Force-Industry Life Support Conference in Las Vegas. The meeting will be held November 28 through December 1, sponsored by the USAF director of Aerospace Safety.

\* \* \*

Frederick Stevens, Northrop vice president and Nortronics general manager, has been appointed to the technical program committee of the ninth annual Winter Convention on Aerospace and Electronic Systems.

## Astroinertial System Completed for SR-71

Northrop Corporation has completed the development and production of an astroinertial navigation and guidance system for the SR-71 triple-sonic, long-range strategic reconnaissance airplane built by Lockheed Aircraft Corporation for the U.S. Air Force.

The system, now in operation, enables the SR-71, the world's fastest and highest flying military airplane, to navigate with high standards of accuracy at speeds of more than 2,000 miles per hour at altitudes of 80,000 feet.

Disclosure of Northrop's role in the SR-71 project was made by President Thomas V. Jones in the company's annual report to shareholders.

The navigation system is based on technology developed at Northrop over the past 20 years for numerous navigation and guidance programs.

Development and production of the SR-71 system was accomplished by the Nortronics Navigation department, under the direction of Ross Miller, Division vice president and department manager. George Fritzel, now director of Manufacturing, was the first program manager, and oversaw the project during the critical early stages. Clyde H. Getz is the current program manager.

Astroinertial navigation relies upon an integrally mounted optical star tracker to obtain information on an aircraft's (or ship's) location by comparing the position of a given star at a given time with data as to where that star should be as programmed and stored in the system's digital computer.

Data, or fixes, from the star tracker are fed directly into the system's computer which automatically provides a new reference to the system's gyroscopic, or inertial, components.

Northrop is a pioneer in development of electro-optical systems for daytime star tracking, and has been able to locate and track in bright sunlight an object as small as an orbiting Echo satellite. Northrop is also a pioneer in the development and production of high-speed, lightweight airborne computers, inertial platforms and precision measurement instruments such as gyro-

scopes and accelerometers.

Computers and gyroscopes are at the heart of nearly all navigation systems, but in cases where long periods of time in the air with maintenance of a high degree of navigational accuracy are requirements, some additional aids are usually included. For the SR-71 the Air Force selected a stellar-monitored inertial system. For the USAF/Lockheed C-5A navigation system presently being developed by Northrop, a Doppler radar is used as an aid to the inertial system. Other navigation systems in which Northrop is participating include the Omega program, which uses a worldwide net of radio signals, and the navigation satellite system.

### Entertainment Set For December 2 Holiday Dance

Northrop Recreation Clubs have acquired Jerry Gray and his Band of Today in the International Ballroom and Maury Diamond's Discotheque in the Gold Room.

This is the lineup, entertainmentwise, December 2 for the annual all-Northrop Holiday Dance planned for the famed International Hotel, Los Angeles.

Tickets sell for a modest \$2 per person and are now available through normal NRC outlets.

Those desiring dinner prior to the 9 p.m. dance hour may make reservations by calling 670-9000.

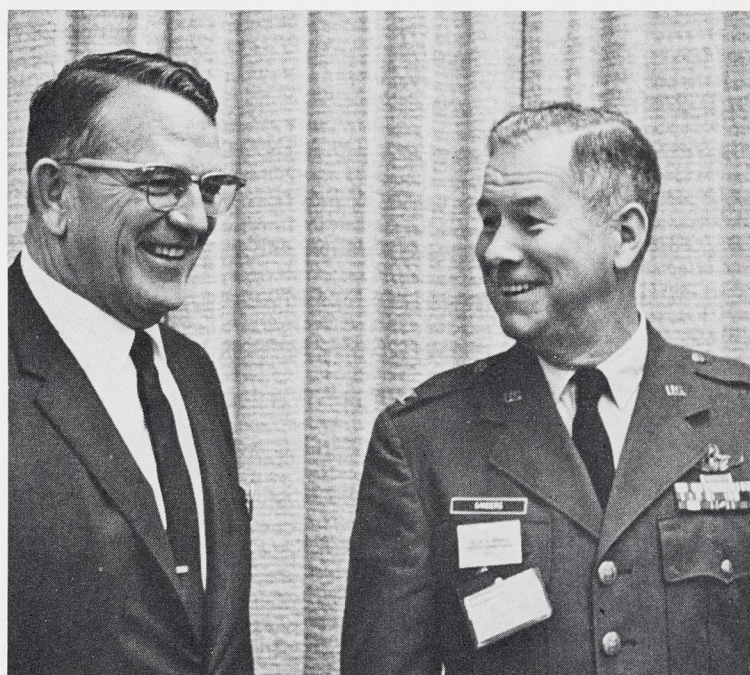
### Golfers Plan Play At Torrey Pines

The Northrop Golf Club has reserved the beautiful Torrey Pines Golf Course for its 1967 Christmas Golf tournament, to be held December 27 and 28.

Contestants will play the north course one day, the south course the second. Green fees and prize funds are \$8. Rooms at the Torrey Pines Inn may be booked for \$10.40 per night. Starting next week, reservations may be made through Personnel Activities offices.



MERITORIOUS SERVICE—Robert S. Catlin (left), Norair manager of Quality Control, receives a Meritorious Service Award from Karl G. Harr, president of the Aerospace Industries Association. Mr. Catlin has been a member of the association for more than a decade. The award was from the AIA Quality Assurance Committee.



A WELCOME TO NORTHROP—Colonel Marshall E. Sanders (right), deputy commandant of the Air Force Institute of Technology, is welcomed at Norair by Richard R. Nolan, Northrop Corporation senior vice president of Manufacturing and Administration. Colonel Sanders and 90 Air Force Education With Industry students visited Northrop for a special briefing.



## Two Employees' Sons Earn Academy Honors

Donald J. Caughlin, jr., and Gary E. Leikam, the sons of Northrop employees, have compiled enviable records as students since they entered the Air Force Academy more than three years ago.

Both are first classmen, or seniors, at the Academy. They'll graduate next June as Air Force second lieutenants.

Cadet Caughlin, the 21-year-old son of Mr. and Mrs. Donald

Caughlin of Torrance, is on the Superintendent's List for excellence in scholastics and military training. His father is a staff assistant at Nortronics Palos Verdes.

In addition to graduating as an Air Force officer, Cadet Caughlin will receive a bachelor of science degree in physics. Last summer, on a cadet field trip, he did research work in the Laser Physics branch at L. G. Hanscom Field, Massachusetts.

Following graduation, he plans to do advanced work toward a master's degree in physics. He'll then attend pilot training school.

Cadet Leikam is the 22-year-old son of Mr. and Mrs. Victor Leikam of Woodland Hills. His father is a foreman at Northrop Norair.

Cadet Leikam also plans to go to graduate school and pilot training school following graduation. He'll receive a bachelor of science degree in aeronautical engineering. He is a cadet captain and material officer for the 26th Squadron, one of the 30 cadet groups in the 3,200-plus Cadet Wing.

He has been a letterman in varsity tennis for two years, and is expected to lead the team in intercollegiate play next season. He is in charge of intramural sports for the 26th Squadron as athletic officer.

Another Northrop "representative" at the Air Force Academy is one of two Northrop X-4 research planes, built for the Air Force in 1949. The X-4 was first flown in January of that year by test pilot Charles Tucker. Elevons—a combination of ailerons and elevators—were used on the small, single-place jet, which had a wingspan of 26 feet, 10 inches, and a cruising speed of 330 miles an hour at 10,000 feet.

Northrop testing of the X-4 continued into 1950. Later, the Air Force and NASA conducted additional testing programs with the craft.

The X-4 is on display in the courtyard of Arnold Hall, cadet recreation center of the Academy.



**T-38 TALON**—A scale model of the Northrop T-38, on display in a lounge at Arnold Hall, is examined by Cadets Donald Caughlin, jr., (left) and Gary Leikam. In the background

is the Northrop-built X-4 research plane. Both cadets plan to enroll in pilot training following their graduation in June as second lieutenants. Both are sons of Northrop employees.

## Three Blood Bank Visits Scheduled For December

Three bloodmobile visits are scheduled for Northrop facilities prior to the busy holiday season, the time of year when the demand for blood often reaches its highest point.

The visits are in support of the Northrop Blood Bank which provides blood for Northrop families without charge.

They will be held December 1 at Mariposa and December 6 at the Norair plant in Hawthorne, both from 9 a.m. to 2:30 p.m., and again December 20 (noon to 4:30 p.m.) at the Santa Fe Facility.

Volunteer donors not only help build Northrop's credit with the American Red Cross, but also establish a personal credit.

## 'WHERE DOES THE LITTLE MAN SIT?'

Paul Stewart, Northrop Ventura Plastics supervisor, recently led a tour of a dozen Bluebirds—girls of ages 7 through 9—and four parents through Ventura facilities.

The girls, from Camarillo, were shown many of the Division's products, including the RP-76 target drone, an unmanned airplane used for the training of anti-aircraft personnel.

Upon seeing the RP-76, one girl raised her hand and asked Mr. Stewart in a sincere voice: "Where does the little man sit?"



**BLUEBIRD VISIT**—Paul Stewart, Northrop Ventura Plastics supervisor, leads a group of Bluebirds—similar to the Brownies or Girl Scouts—on a tour of Ventura facilities. The girls and four parents saw Ventura's production and manufacturing areas.



**PRIZE-WINNING PHOTO**—A horse and its young rider are silhouetted against the ocean as they gallop along the Palos Verdes Peninsula coastline just before sundown. The photo earned

Norair's Donald Skilling \$4,000. It was judged second of more than 258,000 entries in the annual National Newspaper Snapshot Awards contest. Photo courtesy L.A. Herald-Examiner.

## Engineer Earns \$4,000 in First Photo Contest

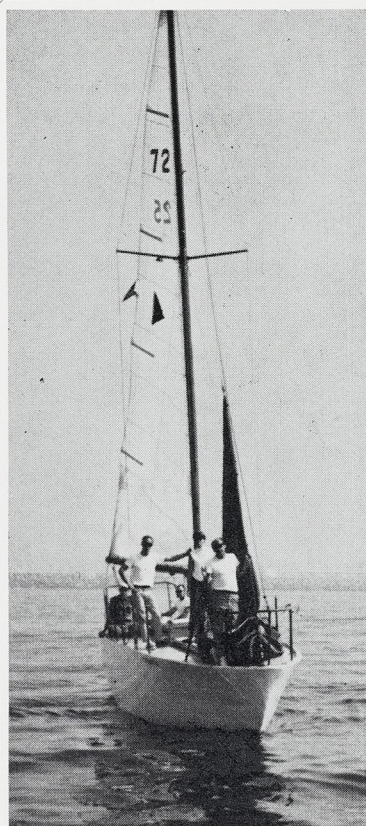
Donald Skilling, an engineering specialist at Northrop Norair, has been an amateur photographer for 20 years but had never—until this year—entered a picture in a contest.

This month, Mr. Skilling learned that his first contest entry had been judged second of more than 258,000 photographs entered in the 29th annual National Newspaper Snapshot Awards. Entries had been received from throughout the United States, Mexico and Canada.

His color photograph, taken near sundown in Rolling Hills, showed a horse and rider galloping near the beach, silhouetted against the sun. The picture earned him \$4,000.

Mr. Skilling, a Palos Verdes Peninsula resident, has been with Northrop for 12 years.

Contest judges included a photographer for National Geographic Magazine and the White House photographer for United Press International.



**THE TORCH**—This is the 32-foot Torch, winner of the 1967 Aerospace Trophy Race for the NRC Sailing Club. The race was held on November 4 at King Harbor.

## NRC Sailing Club Wins Aerospace Trophy Race

The 32-foot sloop, Torch, skippered by Dick Flude of Nortronics and carrying a crew of Eleanor Myers of Norair and Phil Snow, Warren Weimer and Jim Reeder, all of Nortronics, has won the first Aerospace Trophy Race.

In the race at King Harbor in Redondo Beach, the NRC Sailing Club entry defeated the Flyaway II, the entry from TRW. The event was held November 4.

Ed Grant of Nortronics Palos Verdes is the designer and builder of both the Torch and the Flyaway II. He is building a 60-foot ocean racer which will compete in the 1969 Los Angeles to Honolulu Transpac race.

Other Northrop entrants, and their order of finish, were:

Don Wilson of Nortronics, Columbia 26, sixth place; F. A. Van Slyke of Nortronics, Cal-20, seventh; John Goetz of Norair, Islander Bahama, eleventh; and Bill Kelley of Norair, Frisco Flyer, twelfth.



Classified

Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private businesses are not accepted. The Northrop News reserves the right to edit or omit ads. Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 62. Ads are limited to one item and one ad per person each issue. Deadline is noon Wednesday, one week before publication.

For Sale

Turn Table, Bogen, 4-spd., mahogany base, dual cartridge, \$35. Box 2301. A

Lawnmower, Craftsman, reel-type, power, \$25. 375-7265. A

Chevelle, 1965 S.S., 300 h.p., 4-spd., p/s, pos. trac., AM-FM, fact. tach., \$2,100. 370-0970. A

Stereo Sound System, complete, Sansui Tr. 707A tuner, 50 W. amp., tape deck, cabinet, \$595. 372-7075. A

Stove, white, 4-burner, broiler, \$30. 754-3037. A

Sloop, 35' Lion Class, fully equipped, 4 yrs. old, teak w/fibreglass decks, sleeps 6, \$12,500. 830-3792. A

Table Saw, 8" Arbor on stand, 3/4 h.p. motor, 9 blades, moulding set, dado hub, \$50. 320-0328. A

Coffee Table, mahogany, hand carved, kidney-shaped, \$30. 545-1662. A

Bed, single, metal frame on casters, \$25. 833-3334. A

Tile, 100 sq. ft., 6 x 6, white, \$40. 329-7447. A

Camera, Polaroid Swinger, used once, \$15. 379-4075. A

Helmet, white w/clear bubble, \$15. 641-0562. A

Frame for Mini-Bike, \$5. 329-4200. A

Aquarium, Pemco, 5-gal., heater, filter, pump, reflector, \$7.50. 375-4312. A

Honda, 1965, Scrambler, 305 cc, '67 eng. & trans., \$500. 756-2986. A

Camera, Argus, C4, 35mm, flash attach., light meter, time exp., \$25. 714-897-9001. A

Kittens, Siamese, 8 wks. old, 3 males, 2 females, have distemper shots, \$25. 676-5533. A

Range, elec., \$20. 329-9982. A

Guitar, Fender precision bass w/hard shell case, \$200. 542-2287. A

House, 3-bdrm., 1 1/4 bath, fireplace, cpts., dps., view lot, 2-car gar., 15 min. to Northronics P.V., \$29,950. 833-4632. A

Cabin Cruiser, 30', 9' beam, built 1939, 6-cyl., Gray Marine eng., \$2,000. 377-3548. A

Camper, telescopic-type w/scamper jacks, \$600. 675-2005. A

Accordion, Milano, 9-switch, 120 bass, used 1 yr., \$350. 326-5912. A

Sailboat, 18' P-Cat, 2 yrs. old, ss/alum. mask, 1 1/2 h.p. Seagull, marina slip inc. \$900. Box 2302. A

Airplane, 1958 Comanche 180, MK12A, VOA 4, MK2, ADF, \$2,375 for 1/4 share or \$9,500. 375-0615. A

End Tables, 2, coffee table, blonde w/magazine racks, \$7. 714-637-4067. A

Ice Hockey Skates, size 8 1/2, h/toe & 2 bowling balls & bags, \$25. 295-9997. A

TV, 19" Westinghouse, portable, 10 yrs. old, in metal cabinet, \$25. 329-0433. A

Camper Shell to fit 8' bed Fleetside truck, \$50. 320-6943. A

Triumph, 1966, TR4A, o/drive, independent rear suspension, \$2,450. 714-642-1433. A

Couches, 2 yellow Naugahyde, \$60 pr. 347-0298. A

Stroller, twin, other baby items, \$10. 679-1873. A

Ambassador, 1967, p/s, p/b, air cond., V-8, auto., \$3,095. 542-2538. A

Auto Parts for 1962 Corvair, 4-spd. trans., \$45, other parts. 379-9670. A

Chevrolet, 1957, 2-dr. Bel-Air, V-8, Powerglide, p/s, \$375. 679-0555. A

Engine, Pontiac 389, bored to 401, J&E 12.5 to 1 pistons, lge. cam & solids, dual coil ign., \$200. 676-8893. A

Dodge, Dart, 1965, b/seats, new tires & paint, \$1,400. 327-2698. A

Clarinet, Bundy, ebony, \$85. 375-1756. A

Slip Lot, Salton Sea, roads & utilities in, near yacht club, \$7,100. 714-535-1694. A

Surfboard, 9' 8" Gordon & Smith, \$55. 372-4857. A

House, stucco, 3-bdrm., fenced yd., newly decorated, dble. gar., \$16,900. 759-4391. A

Mirrored Piano, upright, mahogany, \$110. 861-1529. A

Pup, miniature dachshund, AKC champ. stock, red female, 6 mos. old, \$70. 325-7806. A

Guitar, elec., Magnetone Zephyr, 2 pick-up, 6 mos. old, \$110. 329-6223. A

Transceiver, Nova-Star comm., 13 crystals, audio amplifier, transistor power supply, speaker, all cables, \$100. 325-3057. A

Mustang, 1965, 2+2, 289 cu. in. eng. new disc brakes & clutch, recent o/haul, AM-FM radio w/stereo rever., \$1,799. 476-5788. A

Pontiac, 1956, 4-dr., auto. trans., good tires, \$75. 379-3134. A

Porsche, 1957, 1600 cc coupe, needs body work, \$475. 756-1431, ext. 215. A

Folding Screen, 3 sections, louvered, wooden, 63" high, \$7. 377-3806. A

For Sale

Own-Your-Own-Apt., lge. 1-bdrm., upstairs above carport, pool, bitlins, \$16,750. 674-7743. A

Poodle, toy, silver, 6" high, 4 lbs., 3 yrs. old, papers, \$100. 370-4416. A

House, 3-bdrm., 1 1/4 baths, fenced yd., patio, newly painted, \$23,500. 754-4707. A

Pontiac, 1956, p/s, p/b, good tires, \$85. 675-9789. A

Oldsmobile, 1963, F-85 Cutlass, auto. trans., r/h, 2-dr., \$1,150. 677-0785. A

Bedspread, yellow/orange floral taffeta, dble. bed size, \$15. 675-8360. A

Auto Stereo, Craig, assortment of tapes, \$50. 327-4052. A

Speed Boat, 12', 20 h.p. Mercury motor, \$250. 679-1550. A

Mustang, 1965, 289 V-8, 3-spd. trans., r/h, \$1,600. 714-529-4497. A

Home, 3-bdrm., 1 1/4 baths, att. dble. gar., fireplace, block wall fence, walk to Northrop, \$23,950. 754-8897. A

Acreage, 80 acres, M-1 zoned, in El Mirage, \$400 acre. 376-2193. A

Heads, manifolds for Lincoln 432 cu. in. eng., \$40, many other parts. 676-3095. A

Triumph, 1965 TR-4, 2 tops, \$1,750. 714-847-4871. A

Pickup Truck, 1967 Dodge, 8' bed, custom cab, std. shift, r/h, air cond. \$2,000. 644-3007. A

Carburetor, 4-bbl., & manifold for T-Bird, Mercury, Lincoln, \$35. 329-3286. A

House, 3-bdrm., 1 1/4 baths, h/wood floors, bltin range & oven, dble. gar., 20 x 20 work rm., \$24,950. 377-4943. A

Chevrolet, 1958 Bel-Air, 2-dr. h/top, 389 cu. in. Pontiac eng. & Hydramatic, Ansen floor-shift, \$425. 329-0504. A

TV, 15" Sylvania, portable, \$20. 714-635-3315. A

Volkswagen, 1960, \$550. 473-6812. A

Station Wagon, 1955 Rambler, \$55. 374-4703. A

Corvair Monza, 1963, 4-dr., r/h, auto., \$550. 675-1343. A

Ski Boots, ladies' size 9, never used, \$15. 714-833-1715. A

Squire Wagon, 1963 Falcon, 6-cyl., auto. trans., r/h, \$795. 343-6213. A

Stereo Turntable, professional, Miracord X200, \$40. 323-6745. A

Pool Table, 4' x 8', 4 cues & regulation balls, rack, \$100. 371-8929. A

Range, O'Keefe & Merritt, gas, \$40. 679-4245. A

Sofa, matching chair, \$75, other items. 373-2165. A

House, 3-bdrm., 2 baths, service porch, f/a heat, covered patio, \$23,900. 321-4529. A

Tools, micrometers, 1" & 2", hole gauges, 1/8" to 2/10", 2 2/10" to 3/10", & others, Starrett or Lufkin, \$35. 676-0049. A

Auto Radio, FM, 12 volt, fits any car, \$30. Box 2303. A

Lots, Lake Isabella, small down & monthly pymts., \$1,650. 323-4329. A

Pearls, cultured, 18" w/pearl clasp, \$13.50. 378-1863. A

Boat, 14' Runabout, Marc 20 motor & trailer, many extras, \$200. 714-638-4623. A

Boat Ladder, used twice, 4 steps, \$6. 675-1982. A

Ford, 1962 Galaxie, 6-cyl. stick, 2-dr. sedan, new tires & battery, \$450. 374-9855. A

Television, maple, console w/doors, \$50. 566-0214. A

Top Rack, for Volkswagen, \$5. 545-6304. A

Chevrolet, 1961 convt., r/h, \$500. 374-2091. A

Floor Scrubber-Waxer, Sears, brushes, buffing pads, cpt. cleaning attach., \$30. 833-5594. A

Triumph, 1960 Herald, new tires, 9 \$32 mo. pymts. or \$285. 374-3508. A

Ski Boots, men's size 9, 5 buckle dble., Koflach Gold Star, used 3 times, \$50. 794-6340. A

Tuner, AM/FM, Heathkit PT-1, \$35. 324-7097. A

Corvette, 1963, 4-spd., 327 cu. in., many extras, \$2,300. 323-3434. A

Camper, Tropicana, 8' cabover, \$895. 675-3541. A

Horse, 1/4-type Gelding, sound & gentle bay, 14.3 hands high, \$175. 329-2016. A

Camera, Pentacon (contax D), single lens reflex, f2.8 lens, case, \$50. Box 2304. A

Home, contemporary, 4-bdrm., 2 baths, hide-away study, bltins, air cond., sliding walls convert living rm., fam. rm., & kit. into party hall, 12 min. from Northrop, \$57,000. 655-5184, 655-5900. A

Camera, Yashica pentamatic SLR, 5 lenses, wide angle to 400 mm, case, accessories, \$250. 291-1641. A

Aquarium, 20-gal. show tank, pump & tropical fish, \$25. 675-8891. A

Receiver, Hallicrafter S-108, general coverage shortwave & broadcast band, AM, CW & sideband capability, other access., \$50. 349-6349. A

Volkswagen, 1966 Fastback, r/h, \$1,800. 379-6284. A

Ford, 1947 coupe convt., rebuilt stock eng., new top, paint, uphol., \$375. 671-0122. A

Chevrolet, 1957 2-dr. Bel-Air, 283, 2 mags, 3-spd., \$475. 757-2356. A

Mercedes-Benz, 1955, good eng., \$100. 375-5885. A

Shower Door, safety glass, std. tub size, \$18. 323-8797. A

Milling Machine, Benchmaster, auto. feeds, \$300. 675-7729. A

For Sale

Motor, 18 h.p. Evinrude, \$170. 676-8965. A

Thunderbird, 1964, full power, \$1,995. 376-9381. A

Oldsmobile, 1960 convt., full power, \$375. 714-826-2076. A

Cruiser, 32', Fellows & Stewart hull, canvas cover, sleeps 6, \$3,900. 370-4315, 328-6727. A

TV, Magnavox, color, \$450. 805-495-8143. A

Drum Set, St. George, 4-pc., \$155. 292-4958. A

Go-Cart, or dune buggy w/Salsbury air-cooled motor, auto. trans., new slick tires, \$135. 676-7109. A

Camera, Polaroid, model 100 w/attachments, \$60. 714-735-6495. A

Drum Set, 4-pc. Crown, cymbal & Hi Hat stands, \$145. Box 2305, 781-3854. A

Grand Piano, Concord, black ebony, 6' front, \$1,500. 714-527-8124. A

Dining Table, Heritage Henredon, walnut, dropleaf, extends to 6' x 46" w/4 chairs, dk. beige uphol., \$40. 675-4752. A

Landscape Rocks from High Sierra country, \$1 to \$20. 676-7542. A

Amplifier, Hi-Fi stereo, Monarch, all solid state, 8 transistor, walnut case, \$55. 832-0025. A

Tempest, 1961, 4-cyl., r/h, new tires, \$395. 674-6172. A

Organ, Hammond spinet, \$1,375. 670-6163. A

MGA, 1957 Series 1500, sports convt., recent o/haul, \$500. 531-9974. A

Trailer, 1/4-ton, spare tire, \$75. 377-3642. A

Table Saw, Craftsman, 10" tilt arbor, 1 h.p. motor, metal stand, \$89. 291-0025. A

Go-Cart, child's, chain driven w/foot pedals, \$8. 378-6325. A

Transmission, Ford, 4-spd., w/bell housing & adapter plate, \$65. 423-4491. A

Organ, Lowery Holiday, mahogany, \$700. 675-3931. A

SSB Transmitter, HX-10 Heathkit Marauder, 180 w. pep, 80-10 meters, \$150. 831-5407. A

Chevrolet, 1965 Impala SS, r/h, fact. air, 3-spd. std. trans., \$1,695. 372-1013. A

Bar, portable, 2 stools, \$10. 324-4817. A

Bicycle, Schwinn Continental, 3-spd. De-railleur, hand brakes, \$50. 370-7092. A

TV, 25" RCA console, birch cabinet, \$50. 326-6214. A

Triumph, 1962, 650 cc, dirt or track, \$600. 676-4892. A

Washer, Westinghouse tumbler, front load, \$25. 823-2242. A

Buick, 1960, 2-dr. h/top, \$500. 781-5907. A

Couch, white Naugahyde, makes into bed, mattress inc., \$50. 675-3407. A

TV Sets, 2 21", \$20 ea. 672-2370. A

House, 2-bdrm., 70' x 100' lot, fenced yd., shade trees, 6 miles from Northrop, \$19,950. 376-2117. A

Cadillac, 1959, 4-dr. sedan, new tires, \$600. 674-8997. A

Grand Prix, 1962, 389 cu. in., r/h, air, 4-spd. trans., p/s, p/b, \$950. 673-3251. A

Drafting Lamp, K&E, \$20. Box 2306. A

Volkswagen, 1966 Fastback, 12,500 miles, r/h, \$1,850. 249-2271. A

Bed, dble., box springs, mattress, walnut bookcase h/board, 5-dwr. matching chest, \$75. 379-8091. A

Piano, upright, Hensel, \$150. 670-5055. A

Volkswagen, 1958 sedan, r/h, \$550. 672-8868. A

Cadillac, 1958, sedan DeVille, all power, 65,000 miles, \$200. 645-9614. A

Acreage, 2 1/2 acres, near Willow Springs, on good road, \$17.50 dn., \$17.50 mo., \$1,750. 378-1026. A

Mountain Lot, Lake Gregory, walk 1/4 block to Club San Moritz, lge. bldg. site for chalet, appraised at \$12,000; \$9,995. 670-4645. A

Wardrobe, 61" wide x 90" high, 26" deep, nat. finish wood, 58" clothes bar, storage shelf, 3 lge. drwrs., \$40. 675-8813. A

Baby Swing, used inside, \$5. 755-7166. A

Ford, 1954 2-dr., \$100. 673-1703. A

Wall Heater, dble., \$10. 766-2809. A

Mini-Bike, 8 h.p., lights, horn, dual tanks, \$169. 393-7464. A

Bar Stools, 3 Swivelle, floral Naugahyde, \$45. 545-4268. A

Triumph, 1959 TR-3, good body, \$550. 329-1657. A

Poker Table, seats 8, folding legs, 52" dia., plywood top for dining, \$20. 378-0477. A

Railroad, H-O model, 4' x 6' layout w/legs, 52' track, many extras, \$50. 757-2955. A

Chevrolet, 1958, V-8, auto., r/h, 4-dr. Bel-Air, \$225. 370-3090. A

Mustang, 1965 convt., V-8, stick, wire whls., \$1,695. 823-2655. A

Washer, Maytag, auto., top loader, \$25. 676-5101. A

Honda, 1966 160, \$400. 676-1653. A

Surfcaster, 12' long, 2-pc., w/Roddy 925 spinning reel, \$35. 371-9925. A

Piano, upright, cutdown top w/swivel stool, \$75. 631-6480. A

House 2 yrs. old, 3-bdrm., convt. den, 2-baths, fireplace, bltins, 2-car gar., patio, small sep. studio, \$43,000. 475-2101. A

Pups, AKC, boxer, will be 8 wks. old, \$75 & up. 378-4676. A

Sailboat, 24' Star Class day sailer, \$1,195. 326-8009, 534-0610. A

Station Wagon, 1965 Ford Country Squire, a/c, p/s, p/b, 390 V-8, auto., \$2,095. 377-9723. A

For Sale

Drill Press, Delta, w/heavy duty 1/2 h.p. motor, \$85. 679-7584. A

Mobile Home, 10' x 49', 2-bdrm., many extras, 1/2 mile from Northrop, \$3,000. 676-6307. A

Pickup, 1964 Chev. 1/2-ton, V-6, stick shift, custom cab, r/h, \$1,095. 324-7841. A

Cadillac, 1961 sedan, DeVille Special, full power, fact. air, \$1,200. 753-3979. A

Accordion, 120 bass, \$100. 326-6195. A

Hillman Minx, 1961, 4-dr., 4-spd. trans., \$145. 671-8401. A

Coat, lady's, mouton, \$55. 370-9138. A

Camping Trailer, 15' Konquest, refrig, stove, 3-way lights, extras, sleeps 6, \$1,150. 805-258-6347. A

Pontiac, 1966 GTO, p/s, p/b, auto. trans., \$2,450. 754-4510. A

Dune Buggy, VW, 1961, \$445. 398-1801. A

Ford, 1936 3-window cpe., 1965 GTO eng. Tri power, new 3-spd. hydramatic trans., \$975. 391-8072. A

Honda, 1963 Dream, 305 cc twin, \$200. 378-2965. A

Bicycles, girls' 24" & 26", \$20 ea. 423-5690. A

Cougar XR7, 1967, GT perform. pkg., air, p/s, \$3,400. 679-7662. A

House, 3-bdrm., 2 baths, many extras, \$25,500. 371-2816. A

Chevrolet, 1960 2-dr., V-8, floor shift, \$250. 677-3920. A

House, 3-bdrm., dining rm., 2 baths, \$37-900. 373-1330. A

Model Train Layout, 4' x 8' American Flyer, 2 levels of track, 3 switches, tunnel, other extras, \$35. 682-1450. A

Comet, 1961 4-dr., r/h, stick shift, \$395. 328-3306. A

Station Wagon, 1966 Ford, 390 cu. in. eng., auto. trans., air, p/s, p/b, \$2,500. 714-692-0152. A

Yamaha, 1966 sport YDS-3, 250 cc, \$400. 323-7544. A

Motorcycle, 1962 Triumph Bonneville, 650 cc, \$600. 323-6382. A

Wristwatch, women's white gold Wittnauer, 17-jewel, \$20. 431-3133. A

Zoom Lens, Pan Cinor compact, for Bolex 16 mm or other reflex camera, range 17 mm to 85 mm f3.8, \$160. 596-0521. A

Wanted to Buy

Microscope, used, student type, reasonable. 321-1655. B

View Lot, Palos Verdes area. 399-5413. B

Tools, body & fender, tool chest. 371-4168. B

Lawn Edger, gasoline or elec. & lawnmower, good condition. 778-3859. B

Jeep, 4-wheel drive in good condition. 370-7749. B

Bicycles, boy's Derailleur & girl's Sting Ray. 675-6904. B

Dresser, dble. or triple, with or w/out mirror. 294-7485. B

Kneehole Desk, mahogany, reasonable. 320-6685. B

Free (To Be Given Away)

Poodle, black, miniature, reg. w/American Kennel Club, 9 yrs. old. 377-9861. D

Baby Bed. 839-9563. D

Pups, mixed terrier & cocker. 631-8333. D

Dog, med. size, male, well trained, had all shots, 2 yrs. old. Box 2307. D

Dog, German shepherd, male, 5 yrs. old, fawn w/black saddle. 378-2965. D

Rentals Offered

House, 9 min. to North. Anaheim, 3-bdrm., 1 1/4 baths, family rm., bltins, fireplace, landscaped, lease w/option or sell, \$195. 714-776-1196. E

Home, 3-bdrm. & den, 1 1/4 baths, covered patio w/pool, sep. dining rm., 1/2 mile to schools, \$285 sale option or \$275 mo. lease. 348-3410. E

Apt, 1-bdrm., 3 blocks from King Harbor, cpts., dps., bltins, \$110 mo. 376-9608. E

Home, 5-bdrm., 2 baths, on dble. lot, living rm., fireplace, dining rm., enc. porch, heated pool, walled patio, det. rec. rm. w/bar, grill & fireplace, dble. gar., 15 min. to Northrop, \$325 mo. 374-8744. E

Townhouse, near Northrop Ventura, 3-bdrm., 3 baths, air cond., heated pool, bltins, 1 yr. lease, \$225 mo. 805-889-1554. E

Apt, unfurn., 1 bdrm., avail. Dec. 1, 10 min. from Northrop Haw., \$90 mo. 674-6942. E

Home, 3-bdrm., unfurn, fireplace, d/washer, near schools, water pd., avail. Dec. 1, \$200 mo. 391-2040. E

Apt, 2-bdrm., bltins, pool, patio, closed gar., near El Camino, adults, \$160. 324-8373. E

Apt, 1-bdrm., unfurn., bltins, closed gar., \$100 mo. 375-0867, 328-9199. E

Apt, 2-bdrm., gar., fenced yd., close to Northrop, \$100 mo. 325-5705. E

House, 2-bdrm., lady, would like to share w/same, \$45 mo. 672-5647. E

Rentals Wanted

House, 1 or 2-bdrm., furn., near Northrop Hawthorne, have small pet & baby, \$100 mo. 374-6494. F

Apt, 2-bdrm., unfurn., w/bltins & refrig. for lady & 10 yr. old daughter, prefer pool & close to school, approx. \$135. 326-1317. F

House, or apt., 3-bdrm., 1 1/2 baths, Santa Monica area. 355-6331. F

Rides and Riders

Rides Wanted

8 a.m. — 4:45 p.m.

Crenshaw & Compton, Gardena. Cathy Young, Norair, ext. 2486, 323-5069.

White Oak & Topham, Encino. Can meet at freeway White Oak off-ramp or Tarzana, Encino, Reseda area. Linnell Anderson, Norair, ext. 1676, 342-7565.

Brookhurst & Adams, Huntington Beach or Harbor & Adams, Costa Mesa. Gene Dukette, Nort. Anaheim, ext. 451, 962-3763.

Santa Barbara & Hillcrest, Los Angeles. William W. Thomas, Norair, ext. 2125, 292-3756, 293-3748.

Hawthorne Blvd. & 118th St., Hawthorne. Can use shuttle bus from any plant. Genevieve Lees, Norair, ext. 4315, 675-1471.

Rides Offered

8 a.m. — 4:45 p.m.

White Oak & Topham, Encino. Can meet at freeway White Oak off-ramp or Tarzana, Encino, Reseda area. Linnell Anderson, Norair, ext. 1676, 342-7565.

Brookhurst & Adams, Huntington Beach or Harbor & Adams, Costa Mesa. Gene Dukette, Nort. Anaheim, ext. 451, 962-3763.

Santa Barbara & Hillcrest, Los Angeles. William W. Thomas, Norair, ext. 2125, 292-3756, 293-3748.

Child Care Offered

Babysitting, in my home, 8 yr. hosp. exper. w/nursery & pediatrics, under walking age preferred, days only. 644-5761. G

Child, 1, 2 - 2 1/2 yr. old, references, playmates. 679-2851. G

Personals

Planning flights to Lake Tahoe, Mammoth, Aspen & Sun Valley in twin-engine Aero Commander, take 4 or 5 more, share expenses. 714-847-2648. L

Sincere thanks to all Northrop friends who so thoughtfully & graciously expressed their sympathy during our recent bereavement. DON PETERS. L

Leuzinger High School alumni class of '48, have you received your 20th reunion mailer? Call 676-8893. L

My sincere appreciation for the kindness & consideration shown by Nortronics employees during the recent loss of my father. ELIZABETH CLAY. L

For Sale or Trade

Pontiac, 1964 Grand Prix, \$1,595 or trade for lot or house of equal value. 674-5953. M

Lot, 100 x 200, in Hesperia, view, \$2,200 or trade for trailer lot at Lake Isabella or Wofford Heights. 672-1716. M

Pool Table, regulation size, \$60 or trade for sofa bed in good condition. 370-0884. M

Jaguar, 1957 XK 140 MC fixed-head coupe, AM/FM radio, only 22,000 miles, \$1,400 or trade for truck or wagon & \$1,000. 320-7487. M

Sound Projector, 16 mm Ampro, \$150 or trade part value for .22 cal. auto. pistol/ rifle, or shotgun. 941-1865. M

T-Bird, 1963, p/s, p/b, fact. air, \$1,650 or trade for late model station wagon. 325-3724. M

Table, rattan, 3' x 4' w/4 rattan chairs, \$35 or trade for hand gun or .22 rifle. 379-3487. M

EDDIE BARKER  
(Continued from page 2)

which today govern production class sports car racing in the United States. He was among the first to campaign for more stringent safety measures, including the use of roll bars and shoulder harness safety belts.

For three years, Mr. Barker and his son owned and operated a sports car shop in Hermosa Beach. Together, they still do custom engine work.

If Mr. Barker's prediction proves to be accurate, the Barker name will continue to appear among the lists of winners at West Coast races. But—after this weekend—it'll be Jerry, not Eddie.

TRACK COACH  
(Continued from page 2)

as a freshman, placed fifth in the Inter-Collegiate Amateur Athletic Association of America cross country championships.

During the following outdoor track season, I was ranked fourth nationally in the 400 meters and 800 meters in freshman and junior college competition. I won various local AAU championships, and competed in the U.S. Olympic Trials in 1960.

Depending upon the nature of my next assignment, and the time I have available, I hope to try out for the U.S. Olympic Team in 1968.



## Navigation Department Sets Delivery of C-5 Equipment

(Continued from page 1)

tion functions with a minimum of operator intervention.

The IDNE Test Set can also automatically diagnose its own ills. By the use of built-in test equipment and a computer tape program, the IDNE Test Set can submit itself to a self-test routine and report to an operator which of its own cards or sub-assemblies is malfunctioning.

Another feature of Nortronics' AGE is that many of its sub-assemblies are designed to be removed and used separately as portable units of support equipment.

Among the most important of these are the Navigational Computer Control Monitor which acts as its "operator console," and the Electronic Command Signal Programmer which loads the memory of the airborne computer.

Items of support equipment delivered to date have included: Parallel Serial Telemetry Buffers, an Inertial Measurement Unit Table, an IDNE Control Monitor, and an IMU Adapter. Altogether, there have been a total of 25 items of AGE completed for use at Nortronics and for shipment to the various Northrop customers.

Several items of AGE have also been delivered to Sanders

Associates and the C-5 MADAR Program. These items of AGE are used in checking out and preparing tape programs, as well as filling and operating the computers.

Delivery of the first complete IDNE Test Set to Lockheed-Georgia is expected in early 1968.

Some of the Nortronics people who Mr. Daggett called attention to as having contributed to the success of the C-5 IDNE AGE Program thus far are: Bob Wilson, lead engineer for mechanical design, along with designers Jim Anderson, Roger Hile, and Les Lauch; Ron Schwartz, responsible for IDNE T/S appearance and human engineering; Jay Albrecht and Ed Grey, development lead engineers, along with development engineers Chuck Fuller, Pete Kataroff, Bill Vadera, and Don Washington. Programming of the IDNE T/S computer is being performed by Sal Pranzo, Gary Wycoff, Bob Skelton, Joel Fleiss, and Aaron Spinak.

This is the first of a two-part series concerning the progress of the C-5 IDNE support program at Nortronics. The Factory Checkout Equipment (FCE) and those persons responsible for its successful completion will be the subject of Part Two, to follow in the Northrop News.

### ANAHEIM DISPATCHER

## Spirnak 'Follows Through'

Any baseball player with a respectable batting average will tell you that "follow through" is as important as meeting the ball. At Nortronics Anaheim the Assembly Control unit "meets the ball," and Project Dispatcher John Spirnak "follows through."

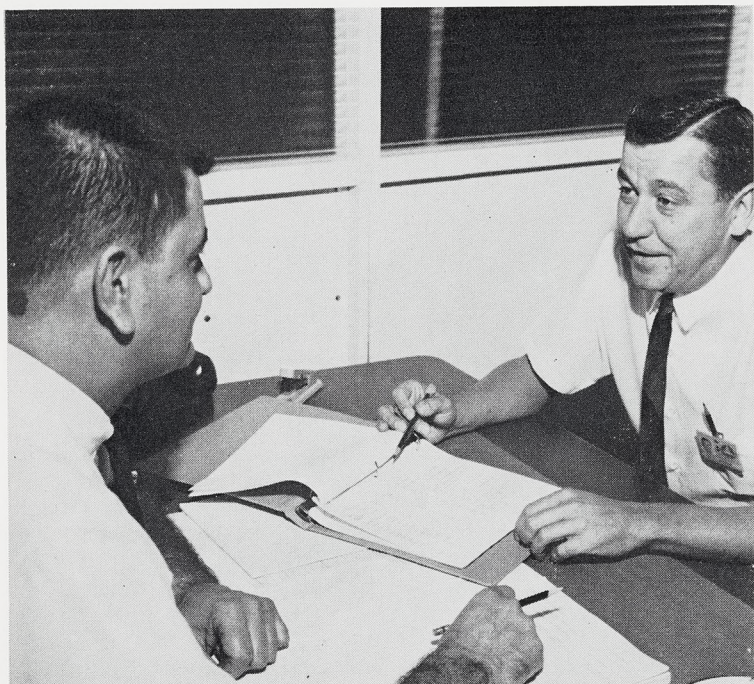
Mr. Spirnak is one of about a dozen project dispatchers, and as leadman is responsible for directing the activity of six to eight unit employees. It is his job to maintain up-to-date knowledge on several hundred fabrication and assembly parts and their nomenclature, and see to it that inventories are sufficient at all times to meet production. Thus assured, he sets about guiding his group to an excellent record of "on sched-

ule" performance.

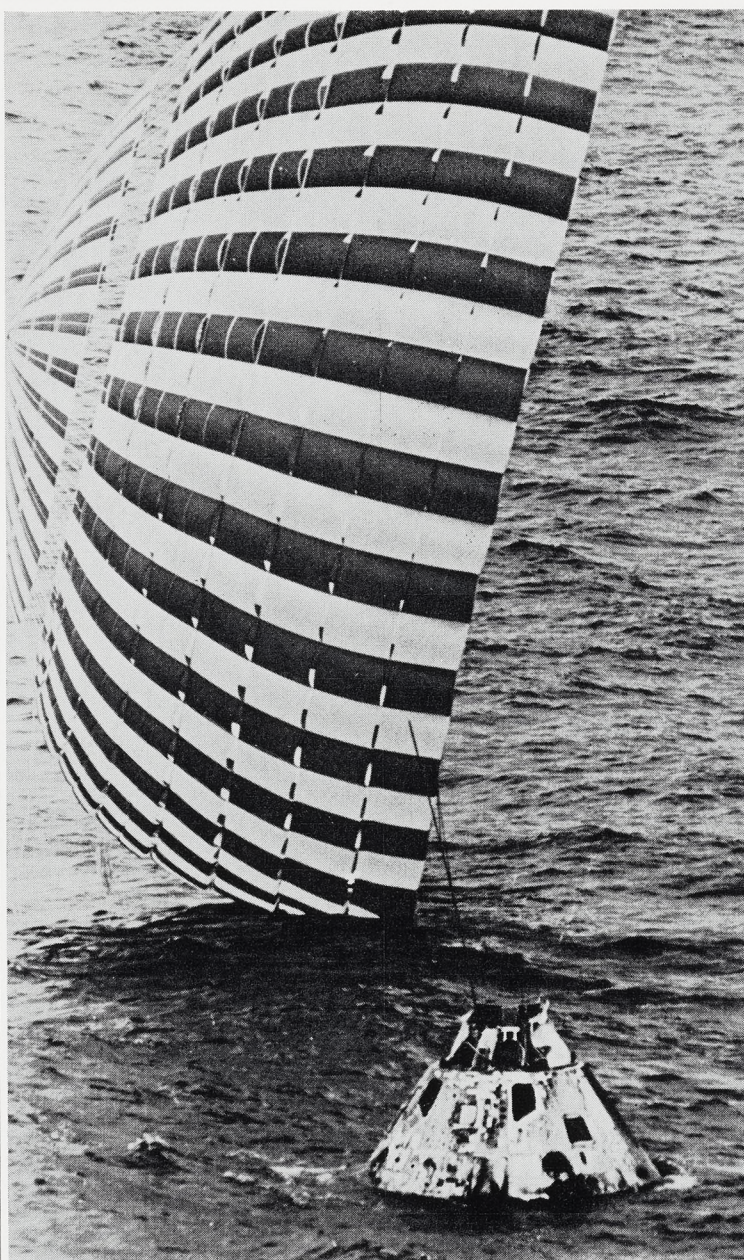
In 16 years of work with Northrop on virtually every Nortronics program, Mr. Spirnak has done this—and done it well.

"But more important," says Dave Harvey, general supervisor of Production Control, "John's a real bird dog. He's on top of every situation as it develops, and often anticipates problems before they arise. He's not limited to a specific project, but immediately adapts to a new program." Mr. Spirnak, a native of Gates, Pennsylvania, shrugs off this praise with, "I just stay with it until the job's done."

When the job is done, Mr. Spirnak and his wife leave their home in Riverside for some surf fishing.



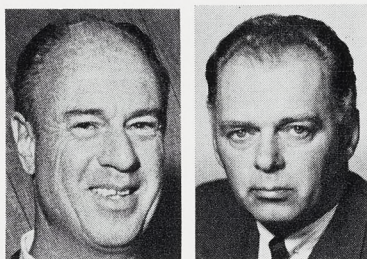
**FOLLOWING THROUGH**—Project Dispatcher John Spirnak (right) checks out parts inventory and nomenclature with Arnold Monreal, supervisor of Fabrication Control at Nortronics Anaheim. True to his title, Mr. Spirnak dispatches each assigned project from its inception to conclusion, assuring on-schedule performance by the Assembly Control unit.



**'MISSION ACCOMPLISHED'**—The Apollo IV capsule bobs in the Pacific Ocean, moments after it splashed down after its eight-hour and 38-minute November 9 mission. One of the three main parachutes remains inflated by 20-knot winds. Northrop Corporation provides parachute systems for the Apollo, as it did for the Mercury and Gemini.

## Clark and Clark Receive 25-Year Service Awards

Two gentlemen named Clark have arrived at the quarter-century mark in their employment with Northrop.



Walter Clark

Harry Clark

In October, Harry Clark, Safety and Suggestion Award administrator from Nortronics Hawthorne, celebrated his 25th year with the company; while the lone 25-year pin for November went to Walter Clark, senior engineer in Tactical Tracking Systems at Nortronics Palos Verdes.

Twenty-year anniversaries were marked in October by Harold Johnson and Reginald H. Benton, but no one reached that plateau in November.

### Holiday Weekend Nears

The four-day Thanksgiving holiday weekend will begin with the close of work shifts today. Regular shifts will resume next Monday.

The lengthy weekend was made possible by coupling Thanksgiving Day with a floating holiday.

Next month, Northrop's year-end holiday will provide 10 calendar days off.

### APOLLO

(Continued from page 1)

watched the total success of the unmanned mission from beginning to end.

Within hours, congratulatory messages began to flow from Washington to NASA and from NASA outward to the more than 20,000 contractor firms which had played a part in the program.

Personnel at Northrop Ventura, where the system is produced, were lauded in wires from Dale D. Myers, program manager for the Apollo command service module at North American Rockwell Corporation, and W. B. Bergen, president of North American's Space Division.

## NRC Councils Elect Kieffer, Paramore

(Continued from page 1)

Mr. McAloon will complete five years with Northrop next month. He is an engineering analyst in Avionics Analytical Engineering at Hawthorne. He has been active in NRC for two years and last year served as Table Tennis commissioner.

Anaheim's Mr. Kieffer is also serving his second term as NRC president. He was president in 1964-65 and treasurer in 1967. In his 17 years with Northrop, Mr. Kieffer has served five years as NRC bowling commissioner and on several occasions as an active Special Events Committee member. He is a material review engineer.

Mr. DePaul has been with Northrop six years and is currently with Standards and Calibration Laboratory in Parts Control. He was bowling commissioner in 1967 and a representative-at-large in 1966.

Mrs. Hopper is a document control clerk in Mechanical Engineering and a five-year Northrop veteran. She is a former NRC secretary, Dance Club commissioner and Coin Club commissioner.

Mrs. Hoag is custodian of petty cash in Receiving. She has been with Northrop 12 years and active in special events and bowling.

Mr. Steinestel is a Machine Shop supervisor and a Northrop 14-year veteran. He has been active behind the scenes with NRC as a golfer, bowler and Special Events committeeman.

### SANTA ANA FIRE

(Continued from page 1)

in the form of necessary funds for food and clothing; and by week's end, the family had moved into a rented house. Mr. Millspaugh was back at his job as contract specifications engineer at Nortronics Anaheim, the children had returned to school, and Mrs. Millspaugh was busy replacing household necessities with out-of-pocket contributions from Bert's fellow workers in the Anaheim office.

In spite of it all, there was only one irreplaceable loss: the Millspaugh's home movies of their six children.



**NORTRONICS AIDS THE YMCA Building Fund** with the presentation of a check for \$1,500 from Frank Lynch (left), Nortronics vice president and Anaheim manager. The donation is received by Ray Hansen, director of the Anaheim YMCA. At right is Nortronics' director of Industrial Relations, Elmer Noonan.



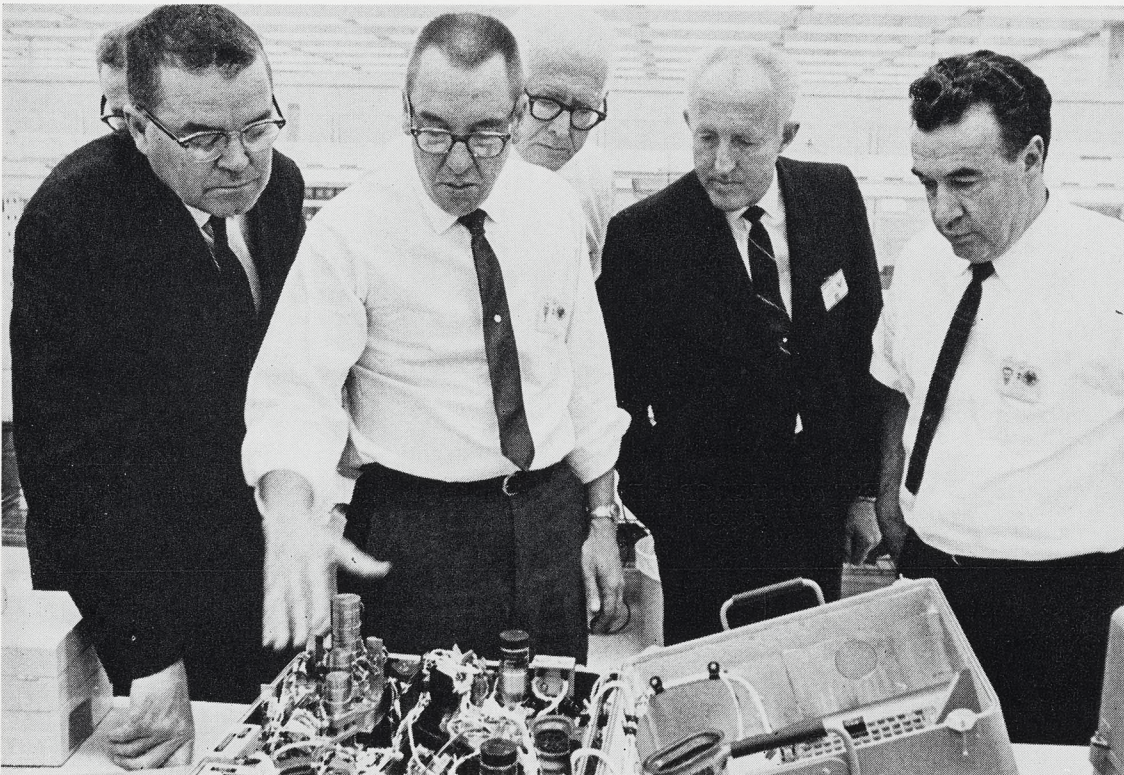
# NORTHROP NEWS

NORTHROP NORTRONICS

Published biweekly by Northrop Corporation, Beverly Hills, California

Vol. 25, No. 24

December 6, 1967



**LOCKHEED VISIT**—Lockheed Georgia Company officials visited Nortronics Hawthorne recently and toured the C-5 Inertial Doppler Navigation Equipment system production and assembly areas. From left are E. B. Gibson, Lockheed Georgia C-5 Engineering manager;

Leroy Kaufold, Nortronics Hawthorne Production Engineering director; John McCarthy, Lockheed Georgia Materiel director; Roy A. Anderson, Lockheed Georgia deputy C-5 program manager; and George Fritz, Nortronics Manufacturing and Procurement director.

## Checkout Equipment Aids C-5 Navigation Program

Equipment for the C-5A Inertial Doppler navigation system is shipped to Lockheed Georgia from Nortronics Hawthorne with confidence that it will perform well.

The reason for this confidence is simple—all systems and components have completed an intensive series of factory tests at Nortronics on specially designed equipment.

In all, 25 separate pieces of checkout equipment were designed and produced by Nortronics for the C-5A. They are used for the computer, inertial measurement unit and clean room activities during production and assembly operations.

Lloyd Balsam, C-5 Program manager, said that Nortronics elected to develop a complete line of new checkout equipment on the premise that it would cut costs and also provide a more uniform checkout process during the program.

"Our decision to use specially designed checkout systems has proven extremely wise," Mr. Balsam said. "The Factory Checkout Equipment (FCE) has proven to be an invaluable part of our effort."

Mr. Balsam said a team of design and development engineers "was given a major task and performed it with speed and ability." The team, Mr. Balsam said, was headed by Bill Lockie, in charge of computer FCE, and Ed Harrison, in charge of the Inertial Measurement unit (FCE).

The test sets are now in the process of being transferred to a full production line role under the jurisdiction of the Product Integrity section. One tester is already in use during a three-shift, 24-hour day. It tests 75 to 100 circuit card assemblies each day.

Identical equipment to the FCE systems will later be produced for the USAF C-5 depot, thus reducing the chance of discrepancies due to different checkout systems.

Three rows of the C-5 production line in Hawthorne are busy assembling factory checkout equipment. Mr. Lockie complimented those involved saying that "the cooperation, pride of workmanship, and ingenuity" contributed by the Manufacturing personnel under Mel Lemoine, Manufacturing supervisor, "has been a big factor in the program's success."

"As an example of how the FCE works," Mr. Lockie explained, "take the Computer Arithmetic-Control Unit Test Set. After an Arithmetic-and-Control section of the C-5 computer is completed, it is inserted in the test set. The switches and dials on the panel are then manipulated according to the test procedure written by members of our group. If there is anything wrong with that section of the computer, our test set will not only reveal that, but will also indicate what part of the section, that is, what 'stick,' is at fault. This stick is then removed and inserted in our Electronic Circuit Plug-in Unit Bit Circuit Card Test Set."

Among those who have contributed to the success of the C-5 IDNE FCE program have been: Ed Ross, lead design engineer; Herrow Randle, Rudy Islas, Tom McMahon and Ray Hull, designers; Ron Schwartz, industrial designer; Bob Cobb, George Iseri, Dewey Hock, Chuck Lotterman, Bill Newman, Hank Parker, Don Schubert, Carl Watson, Jet Yamamoto, Chuck Fuller, and Bill Vedera, electronic development engineers.

## First Quarter Record Sales, Earnings Told

In a period of continuing expansion and progress, Northrop Corporation has recorded another advancement of importance to all employees and shareholders—the highest first quarter earnings and sales in the company's history.

President Thomas V. Jones hailed the achievement as a tribute to all company personnel, in reporting results of company operations for the three months which ended on October 31.

Net earnings for the first quarter were \$3,082,000, or 65 cents per share on the 4,509,000 average shares of stock outstanding in the period, compared with \$2,527,000, or 60 cents per share, on the 4,210,000 average shares outstanding a year ago.

Sales and other income totaled \$121,264,000 for the current first quarter, compared with \$102,005,000 for the same period last year, Mr. Jones said. The backlog on October 31 was \$608 million, up from \$557 million a year ago.

"We have just recorded our best first quarter sales and profits in the company's history," Mr. Jones said.

"This achievement is a tribute to all of the company's organizations and their people. I know it represents a great deal of dedicated hard work, and it is this kind of effort which will bring further growth of the company, with expanding opportunities for advancement, and greater security."

Mr. Jones predicted the trend of increased earnings would continue in the current fiscal year, which ends July 31, 1968. He estimated that earnings would increase to more than \$14 million.

## 'SECRETARY' AIDS IN MANEUVERS

A small "electronic secretary," developed and produced at Nortronics, has been used to help evaluate the capability of military aircraft to penetrate and strike targets on simulated battlefields in the Southwest. The secretary, a small voice recorder, provided permanent records of all aircrew and groundcrew communication during the more than 500 missions, flown by Air Force and Navy fighters and Army helicopters.

The recorders were installed in instrumentation pods, which resemble wing fuel tanks. The pods, containing many electronic monitoring devices, were mounted under or in all the participating aircraft.

The information collected by the electronic equipment assisted in close monitoring of the low-level attack missions, and also allowed detailed analysis and documentation of the important program.

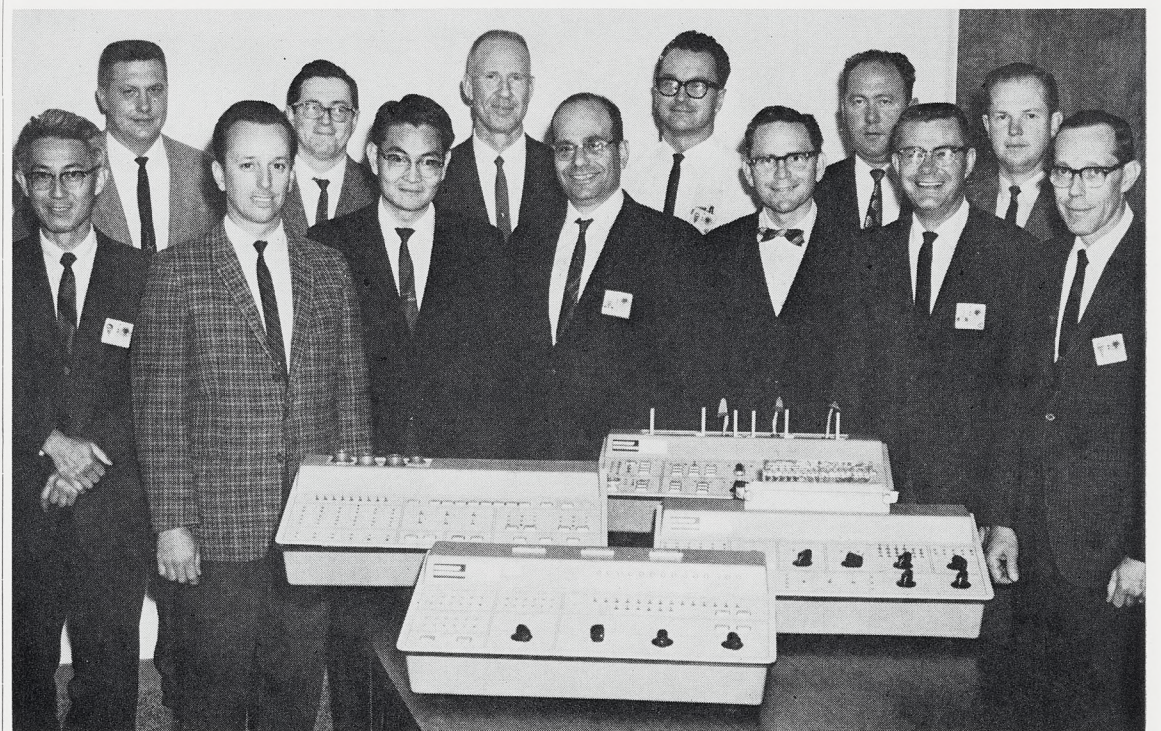
The flight test program was conducted by Joint Task Force Two, headquartered at Sandia Base, New Mexico, an operational test organization of the Department of Defense. The Task Force was charged with evaluating how well aircrews obtain and report intelligence data during important missions. Through tests such as this, the Department of Defense is able to raise the efficiency level of aircraft and crews to effectively penetrate, collect and report intelligence data.

## Symphonaires Plan Christmas Appearances

Northrop's Symphonaires are entering their annual "busy season" as they prepare to lift their voices in a series of Christmas time appearances.

Gene Boggess, NRC Symphonaire commissioner, is especially busy. He will appear with his group and also serve again as coordinating director for the Centinela Valley Fine Arts Association's Christmas Festival of Music. It will be held December 19 at the Hawthorne Memorial Center. This 8 p.m. event is free and open to the public.

The Symphonaires will be among the featured choral groups there. In addition, they sang last week for the Norair Management Club and will sing this week for NRC Councils from Norair and Nortronics, December 15 at Harbor General Hospital, and twice December 17 for the annual Northrop Children's Christmas Party.



**C-5 CONTROL EQUIPMENT** is displayed before those who made it a success. The IDNE engineers and designers who completed the project at Nortronics are (back row, from left), Dewey Hock, Bob Cobb, Ed Harrison, Hank

Parker, Bill Lockie and Ed Ross. In the front row (from left) are George Iseri, Ray Hull, Jet Yamamoto, Chuck Lotterman, Bill Newman, Carl Watson and Don Schubert. The new test sets occupy half the space of former cabinets.



## Northrop Joins Northrop; He's the 11th Since 1939

"Northrop" is not a common name. Nor is it unusual. So, taking this into consideration, how many "Northrop's" would you guess have worked for the company in its 28-year history?

A thousand? . . . three-hundred? . . . twenty-five? . . . one? . . . or none? If your guess was any of these, you're wrong.

Personnel records indicate that, following John K. Northrop, the company's founder and first president, only 10 other "Northrop" employees have appeared on the payrolls since 1939. That is, employees with the exact last name spelling of N-o-r-t-h-r-o-p. Sorry, but "Northrup" with a "u" doesn't count.

Northrop's "Northrops" have utilized skills and talents over a wide area ranging from mathematics to laminated plastic fabricating and sandblasting. The newest in this distinctive name category is Earl D. Northrop. He's a cabinet maker, and has just joined the Norair Model shop.

He is only the second Northrop

to join the company in the last 10 years, and the only one on the payroll at present.

Before becoming a precision mockup and tooling builder here, Mr. Northrop was self-employed and at one time operated his own cabinet shop.

That was after the excitement of owning a lion—well, actually only half a lion.

Earl was raised around Thousand Oaks, and training wild animals for films, zoos and circuses "sort of ran in the family." So, it was not at all out of character for Mr. Northrop to wake up one morning owning 50 per cent of Fearless Fagan. "Fearless" or Fagan, as his friends call him—since full-grown lions don't have a lot of enemies—was a Hollywood-type, and appeared in a 1950 MGM feature motion picture with Janet Leigh. Later that year, Earl appeared with the lion in a Life Magazine feature article.

Although his love of animals and their training continues, Mr. Northrop has abandoned his work with "big cats" for the safer, if less exciting, work offered at Northrop.

During off hours and on weekends, Mr. Northrop and his wife, Rosalee, spend time with their five children and five grandchildren at their home in Lomita; or they run down to the docks at Wilmington, where he owns half interest in a commercial fishing boat, and watch the albacore come in.

Mr. Northrop has been thinking of checking employment possibilities at Northrop "off and on now for about 20 years." Now that he's associated with the company that bears his name, he's "glad I finally made it."

### Winter Ball Team Wins League Title

Northrop Norair's lone entry in winter league softball action, the Talons, chalked up some impressive honors in the brief season just concluded.

The NRC Talons took first in the Alondra Park "C" Major class with a record of seven wins and a single tie.



**NORTHROP'S NEWEST NORTHROP** is Earl D. Northrop, one of only 11 persons named Northrop to be employed by the company dur-

ing its 28-year history. Mr. Northrop, a former self-employed cabinet maker, joined the Norair Model shop on November 1.

## Norair Man's Daughter Joins United Airlines

The daughter of a veteran Northrop Norair employee was among graduates of the 100th class at the United Airlines Stewardess School in Chicago.

She is Dorothy Marie Eaglin, daughter of D. H. Eaglin, Change Estimating supervisor for the Boeing 747 Program at Norair.



Miss Eaglin

Miss Eaglin is now based at Kennedy International Airport, New York, and made her first flight as a stewardess on Thanksgiving Day.

A graduate of Fullerton Junior College and Mater Dei High School of Santa Ana, Miss Eaglin spent the past summer completing her college language requirements by studying Spanish at Guadalajara, Mexico.

## Page Awarded Vietnam System Army Contract

Page Communications Engineers, a Northrop subsidiary, has been awarded an \$8,750,000 contract to maintain and operate the principal U.S. military communications system in South Vietnam.

Under the contract, awarded by the Army Electronics Command at Fort Monmouth, New Jersey, Northrop Page will be responsible for maintaining and operating 44 sites of the Integrated Wideband Communications System (IWCS) in South Vietnam.

IWCS is the backbone of U.S. military communications in Southeast Asia. It provides multi-channel, voice, teletypewriter and data communications. When completed, the mainline and spur links will total about 470,000 circuit miles.

Page, based in Washington, D.C., has been supervising the construction and installation of the system in South Vietnam.

Page also has received several government contracts for the installation and maintenance of communications networks in the Philippines and other areas of Southeast Asia.

## Annual Christmas Parties Planned by NRC Groups

To the very young Christmas is a variety of things—parties, lots of kids, gifts, goodies, entertainment, Santa Claus, the opportunity to mix and mingle with friends, old and new . . .

Aware of all this are Northrop Recreation Clubs who are putting together three special parties, tailored to the tastes of the young, but also open to adults.

All will be held Sunday, December 17.

Up north, in the Antelope Valley, the children of Northrop personnel at Palmdale, Edwards AFB and Edwards/JPL will find their party at the Sage School, Palmdale. It begins at 1 p.m. and ends at 5 p.m. That is ample time for games, prizes, surprises, entertainment, refreshments, gifts and that all-important chat with Santa Claus.

Down south, in Anaheim, parents and youngsters from Nortronics Anaheim will converge on the NRC Clubhouse, Fullerton, for what has become an annual treat for one and all. The hours are noon to 4:30 p.m.

Special pains have been taken to provide something new for the kiddies this year in the form of a "winter wonderland" theme. Refreshments and goodies, for example, will come from a "candy kitchen." At "toyland" there will be gifts for all ages. A

Christmas tree has given way this year to a whole "forest" just made for exploring. Weather permitting, the more active may venture outside to ride live ponies and the ever-popular merry-go-round. In such a setting Santa Claus will reign supreme, but will be ready to chat with one and all.

Right in the middle of things will be a party so big it must be staged in two segments due to the capacity of Los Angeles' Shrine Auditorium. One begins at 1 p.m., the other at 4:30 p.m. Each will be identical.

There is a giant show planned. It features such acts as the famed "French Poodle Review" and Bob Karl, a ventriloquist extraordinary. There will also be special color cartoons with a Christmas theme and the Northrop Symphonaires presenting Christmas music at its best.

Despite the size, there will be gifts for each youngster attending and a chance to "talk business" with Santa.

Northrop Recreation Clubs serving the Corporate office, Norair and Nortronics Hawthorne and Palos Verdes have distributed tickets to this event to those who requested them. Due to the crowds expected, tickets will be required for admittance.

### FOR AIR FORCE

## T-38 Talon Sets Record

The 3640th Pilot Training Wing at Laredo AFB, Texas, recently set a new Air Training Command utilization record of 67.1 hours per assigned aircraft for the Northrop-built T-38 Talon trainer.

The record covered the month of October and included 3,710 sorties during which 5,370 flying hours were logged.

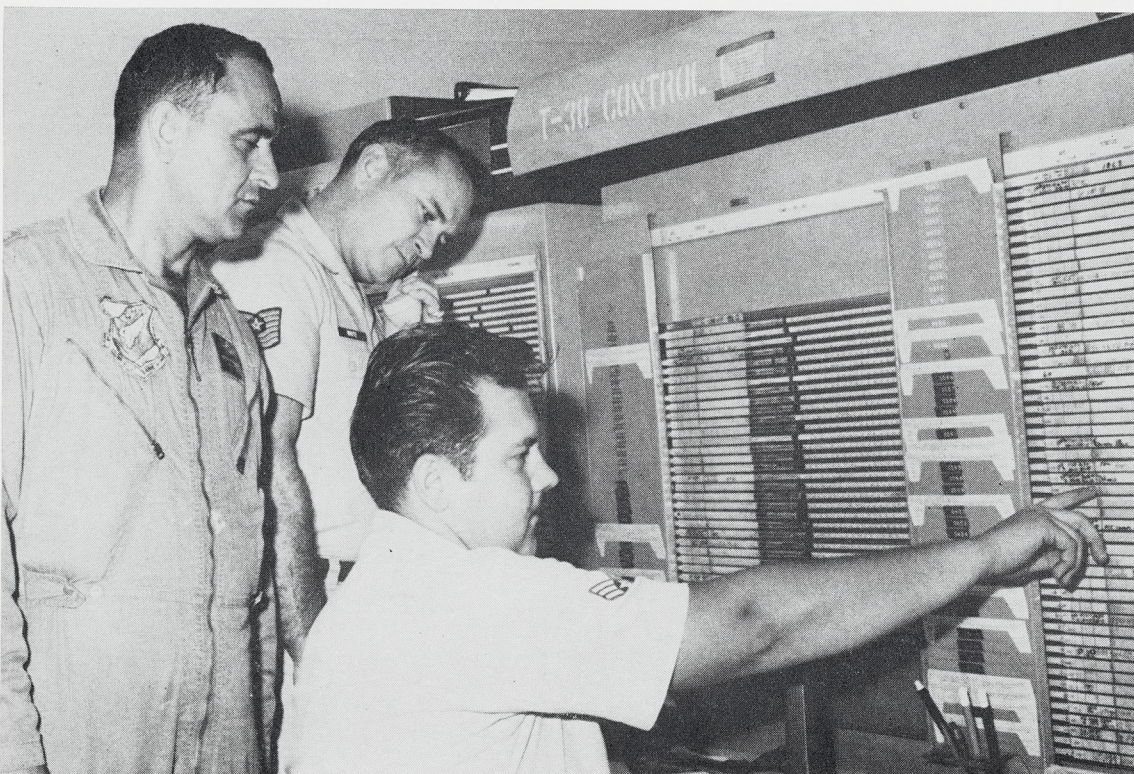
Colonel Joseph Z. Matte, wing deputy commander for Materiel, noted an unusual aspect of the record-breaking achievement.

"High utilization rates on aircraft normally result in high maintenance rates and generally reduced maintenance effective-

ness for several months following such performances," he said, "but this is not so in our case. We finished the month in better maintenance posture than when we began."

On October 1, 72.5 per cent of the 80 Northrop T-38's flown by the wing were operationally ready. By the end of the month, despite the record performance, 81.3 per cent were operationally ready.

Colonel Harold F. Knowles, wing commander, added another thought: "Accomplishment of this record is particularly significant when you consider that many of the maintenance personnel are on the apprentice level."



**MAINTENANCE RECORD** — Lt. Colonel Obrad Marinkovich (left), chief of Maintenance at Laredo AFB, watches as Sergeant Ray Lapinskas locates one of the base's 80 T-38's on

a control board. Between them is Master Sergeant Charles White. The T-38 set a new utilization record of 67.1 hours per assigned aircraft during October.





*POINTING TOWARD PROGRESS* is William Larrabee, Corporate vice president of Industrial Relations, as he shows a model of Norair's expanded facilities which have made hundreds of new jobs available since the giant Boeing 747 Program began. Mr. Larrabee's visitors are

Dionicio Morales (left), executive director of the Mexican-American Opportunity Foundation (MAOF); Edgar Perez (center), job counselor for the MAOF; and Don Staagy, director of the Bureau of Indian Affairs.

## On-The-Job Training Increased at Northrop

Northrop's participation in the U.S. Department of Labor's On-The-Job-Training (OJT) Program continues to be substantial as the inherent capabilities among new Mexican-American employees develop into real skills much needed by the company.

Actually, the employment of Mexican-Americans is nothing new to Northrop. Of the more than 600 Mexican-Americans now working at Northrop's Norair Division, many have been with the company for 10, 15, or 20 years. Three of these valued employees, F. L. Romero, E. B. Verlarde and D. R. Reyes, are now wearing their 25-year service pins.

But the Mexican-American Opportunity Foundation Program at Northrop is new, and was so successful in its initial implementation, which concluded last July, that the Labor Department has funded an extended 18 months of training prior to employment. Of the original group of Mexican-Americans hired on the OJT hourly basis, an impressive percentage has been employed at Northrop utilizing their new skills.

Northrop remains interested in employing Mexican-Americans not only because of the increased workload brought on by the long-term Boeing 747 commitment at Norair, but because of the high proficiency of these workers. "Our shop foremen tell us that the Mexican-Americans we've been able to place in recent months are doing a fine job," says Paul Crews, Norair director of Industrial Relations. "They are extremely loyal, hard-working, and eager to learn," he added.

Compatible with this praise from the company are expressions from the Mexican-American community. Dionicio Morales, executive director of the MAOF, voiced his reaction, saying, "We are glad to have Northrop squarely behind us in our continuing campaign to train and find jobs for the thousands of Mexican-Americans in Southern California who have no place to turn in their search for work."

Workers themselves echo the

positive feeling toward their company. "I'm glad to be learning a skilled trade," says machine shop trainee Joe Martinez, "and hope to be working here as a machinist for many years." And, in the words of Solomon Espinosa:

"I've helped build T-38 trainers and F-5 fighters during my six years at Norair. It's a fine company to work for."

In response to an invitation from the White House, a delegation from the company attended the recent Cabinet Committee Hearings on Mexican-American Affairs at El Paso, Texas. William Larrabee, Corporate vice president of Industrial Relations; Alan Morgan, vice president; and Frank Macias, research scientist at Northrop Corporate Laboratories and secretary of the Mexican-American Opportunity Foundation, were present for the talks.

The purpose of the hearings was to learn how to deal better with the Mexican-American employment problems. "If there is any way we can continue to assist the Mexican-American community," said Mr. Macias, "we want to know about it. We are certainly proud of what has already been done at Northrop."

Mr. Macias, a long-time leader in Mexican-American affairs, explained that the Northrop OJT Program is unique in that it trains workers to perform jobs for which there is an immediate need, and upon successful completion of the prescribed training period, jobs are definitely available. "This is a much better approach than other programs which may train an unskilled individual," he indicated, "but then offer nothing in the way of employment to follow the training."

In commenting on Mr. Macias' contribution to Mexican-American advancement, Mr. Larrabee said:

"Mr. Macias is entitled to a great deal of credit for the work which he has done in furthering the cause of the Mexican-American in Los Angeles. Because of his efforts, many people from the

(See TRAINING, page 4)

## Boeing Plans Entertainment Systems for 747 Jetliner

New concepts in entertainment for passengers aboard the giant Boeing 747 are under study in a cabin mockup of the superjet.

Several on-board entertainment systems have been tested at Boeing's Commercial Airplane Division and demonstrated to airline representatives. Each airline will choose its own type of entertainment system.

Every Northrop division is active in the Boeing 747 Program. Norair is building a 153-foot section of the fuselage. Ventura is providing wing fairings and Nortronics is fabricating stringer sections for the frame. Northrop Architectural Systems is working on the cabin flooring.

Boeing engineers point out that the very size and spaciousness of the 747's 20-foot-wide cabin require completely new entertainment systems rather than merely reworking present equipment.

Thus, the 747 is the first airliner to include provisions for passenger entertainment in its original design.

Included among the entertainment ideas are direct-projection motion picture units for wide-screen-type films. The 28 by 76-inch screens, largest yet developed for passenger airplanes, are mounted at the forward end of the first class section and on the walls of the center galleys and lavatories in the economy sections.

Projectors for these center-cabin screens are suspended from the ceiling near the overhead stowage compartments. Up to four and one-half hours of films—the equivalent of two full-length feature films—can be shown on the new equipment without rewinding.

A second idea incorporates projection units suspended over the airplane's double aisles. A continuous film travels the length of the 747 passenger cabin through viewing units along one side of the airplane, then returns through the projectors on the other side. Each of these viewing units offers a screen

(See 747, page 5)

## Officer To Attend Research Pilot Training School

An Air Force officer who flew combat missions in Vietnam in the Northrop F-5 tactical fighter and subsequently served as an F-5 instructor pilot has been named to attend the Aerospace Research Pilot School at Edwards Air Force Base.

He is Captain James W. Thar, currently assigned to the 4441st Combat Crew Training Squadron at Williams Air Force Base, Arizona.

Captain Thar flew 100 missions in-country and 30 missions out of country in the Northrop F-5 during a duty tour in Vietnam.

## SHOCK TESTING

### Nineteen Complete Course

Representatives from three major Northrop Norair organizations received certificates from Bob Catlin, manager of Quality Control, last month signifying completion of a special Vibration and Shock Testing training course.

This 40-hour course was presented by the Tustin Institute of Technology, Santa Barbara, with Wayne Tustin, president, serving as instructor. Sessions were held at the Mariposa Facility.

Taking part were Norair men

from Quality Control, Engineering Laboratories and Research Laboratories.

The graduates are Alfred Gordon, Steve Stein, Tom Clouse, Ernest Cohen, John Taylor, Warren Tribble, Paul Finwall, Anthony DeMello, Harold Spivey, Eric Lenk, James Porter, John Loquet, Charles Schumacher, Nicholas Berke, Phil Bickal, Gerard Groeneveld, Ronald Saldana, Marvin Schneider and Richard Wilson.



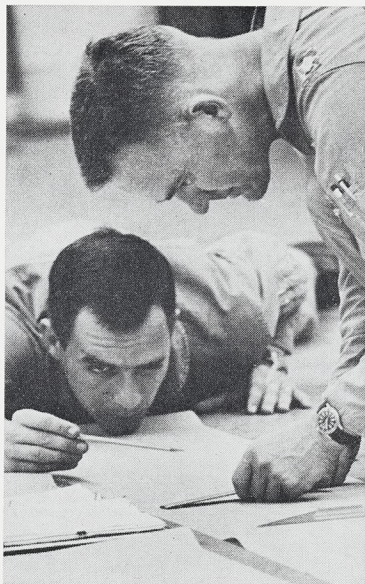
*ON THE SCENE* of a recent Vibration and Shock Testing training course are representatives of three major Norair organizations who took

part in a 40-hour class, their instructor, Wayne Tustin, and Bob Catlin, Norair manager of Quality Control, who presented certificates.





AIR FORCE, NAVY, NORAIR representatives taking part in a year-long Air Force technology flight test program on the unique P.1127 jet-lift V/STOL aircraft are gathered at left. Norair support included design, fabrication, installation and maintenance of complete data acquisition



system, plus data processing and technical consultation. Program pilots, Lieutenant William Casey, USN, and Lt. Colonel John Ludwig, USAF (right), use an old technique in plotting a line on oscillograph tape record following one of the 63 flights conducted.



UP SHE GOES—Key men in the Air Force P.1127 V/STOL flight test effort cover their ears and watch aircraft go through one of its grasshopper-like maneuvers. They are (from left) Gordon McKinzie, USAF project engineer; Allan Legge of Bristol Siddeley; Dick Oliver, Norair project engineer; and Woody Wilson, Norair instrumentation engineer.

## AT 30,000 FEET

### How To Re-Enlist in an F-5

Staff Sergeant Ronald Taylor, a crew chief with the 4441st Combat Crew Training Squadron, drives a hard bargain.

When he was approached about re-enlisting for a third four-year tour, he said that he wanted a flight in an F-5 first.

Sergeant Taylor not only got his wish, but became the first person to take the oath of re-enlistment at 30,000 feet in the Northrop-built Freedom Fighter jet.

Lt. Colonel Albert Hopkins, jr., commander of the 4441st, piloted the silver jet in a flight that Sergeant Taylor described as "just great." Now, Colonel Hopkins has a long list of, "We won't re-up unless . . .," people that he probably couldn't take care of for months.

In addition to the re-up ceremony, the duo flew over Phoenix on the way to Luke AFB, where Sergeant Taylor was stationed three years ago. But when they arrived at Luke, they found

the field completely socked in by clouds, and they had to return.

Stationed at Williams since August, Sergeant Taylor has served previous tours in Japan, and most recently, Tan Son Nhut AB, South Vietnam.

Refueling, changing tires, washing windshields (yes, jets do have windshields), and doing minor maintenance, he has been a crew chief for almost all of his seven years in the Air Force.

Sergeant Taylor and his wife, Elaine, live in Mesa.

### Car Club Members To Discuss Election

Northrop Sports Car Club members will meet at 7:30 p.m. December 12 at NRC Clubhouse, Hawthorne.

They'll discuss plans for a Christmas party, and set the stage for elections to be held January 9, according to NRC Commissioner Don Burke.

### Golf Association Plans Meeting

The Northrop Golf Association will hold its final business meeting of the year at 5 p.m. tomorrow at NRC Clubhouse, Hawthorne.

Norair NRC Commissioner Warren Lindsey indicates the agenda will include a golf film, refreshments, a discussion of 1968 tournaments and activities and the election of a new commissioner.

### Ski Club Returns From First Outing

Members of the Northrop Ski Club held their first group tour of the season to the Mammoth Mountain ski areas over the past weekend.

The two-day trek found members traveling together via chartered bus. Subsequent trips will depend upon the amount of snow available for skiing.

### Hawaii-Bound Group To Set Final Plans

Approximately 100 Northrop travelers will gather at the Alondra Club, Lawndale, at 8 p.m. Friday to map final plans for their yearend holiday excursion to Hawaii.

This 10-day tour, sponsored jointly by NRC Travel Clubs, will depart December 23 aboard Pan American Airways.

## TRAINING

(Continued from page 3)

Mexican-American community have become involved in Northrop training programs with the finest of results." Mr. Larrabee had additional comment on the El Paso conference, saying, "It was very gratifying to hear our company singled out by name at the Cabinet Committee Hearings on Mexican-American Affairs, as an organization making substantial contributions to the work of the Mexican-American Opportunity Foundation."

The hearings were conducted before members of the President's Cabinet and concerned the problems of Mexican-Americans in the areas of employment, education, housing, agriculture, and economic and social development. President Lyndon Johnson, Vice President Hubert Humphrey and Mexico's President Gustavo Diaz Ordaz, addressed the conference.

## THIRD IN SERIES

### ACA Meets in Anaheim

The third in a continuing series of meetings of the American Compensation Association (ACA) was hosted last month by Nortronics at the company's Anaheim Facility.

Attending the half-day session were members of the board of directors of the ACA, its regional officers and chairmen of working committees. Present for the talks were: Eugene Hamilton, executive vice president of ACA and compensation manager for TRW Corporation; Ken Foster, vice president of the ACA western region and compensation manager of the System Development Corporation; Ron Jackson, ACA publicity chairman and manager of Corporate Compensation for Litton Industries; Paul Pewe, ACA board member and supervisor of Salary Administration at the Sandia Corporation; John Richardson, programs chairman for ACA and chief of Norair Personnel and Compensation; Fred Meuter, compensation administrator at Norair; and Jerry Wajda, secretary-treasurer of ACA and chief of Compensation and Development at Nortronics.

The ACA is devoted to promoting the exchange of information relating to current compensation practices and research, and to further the field of compensation as a profession.

The purpose of the discussions, as explained by Mr. Wajda, "is

to determine methods of developing a large membership base in the western region, and to formulate plans for the Association's regional conference."

Approximately 350 to 400 are expected for the spring sessions set for next May in Los Angeles.

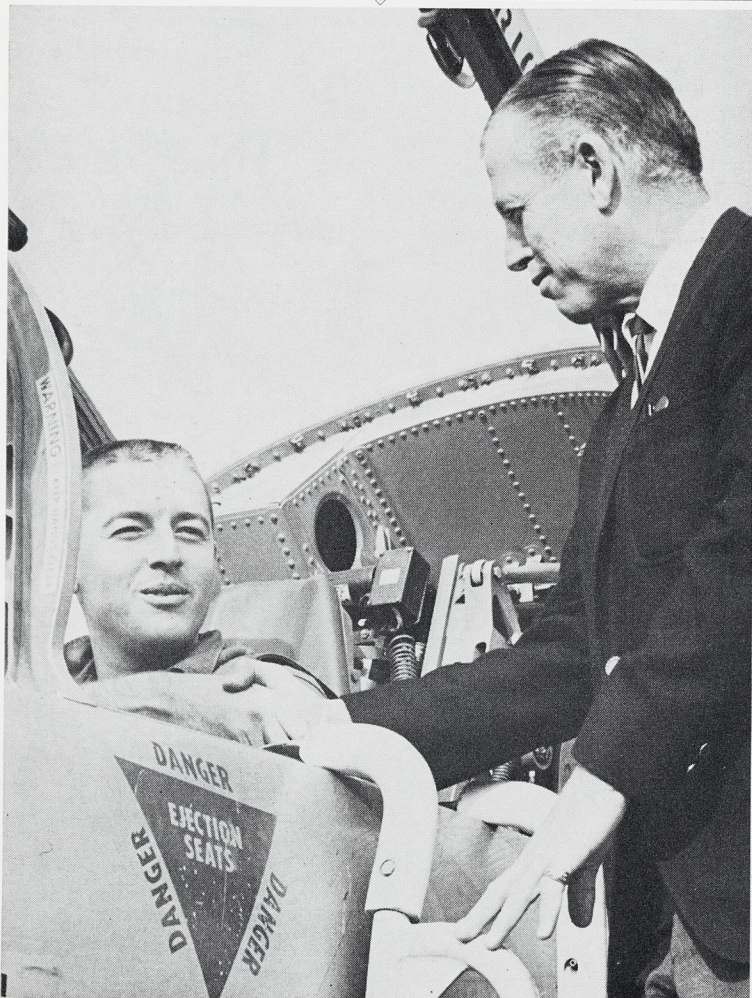
### Page Completes Communications Training Facility

A major communications training facility, built by Page Communications Engineers for the United States Army, has been dedicated at Fort Monmouth, New Jersey.

The training facility is equipped with an Integrated Wideband Communications System, similar to most of the strategic communications systems used in South Vietnam and Thailand by U.S. Army troops.

Page, a subsidiary of Northrop, is the prime contractor to the Army's Strategic Command for the engineering and installing of that type of equipment.

The new facility, at the Army's Fort Monmouth Signal Center and School, was dedicated by Brig. General Thomas M. Rienzi, commanding general of the center. Also attending the dedication was Joseph Waldschmitt, president of Page Communications Engineers.



AIRBORNE RE-ENLISTMENT—Air Force Sergeant Ronald Taylor (left) talks with Northrop Representative Hank Waklee, shortly before taking his first flight in the Northrop-built F-5. Sergeant Taylor was administered the oath of re-enlistment at an altitude of 30,000 feet.



AMERICAN COMPENSATION ASSOCIATION meetings continue as members of the board of the ACA and its regional officers gather at Nortronics Anaheim. They are (from left), John Richardson, programs chairman; Jerry Wajda, secretary-treasurer; Ken Foster, vice president of the western region; Ron Jackson, publicity chairman; and Paul Pewe, board member.



# Classified

Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private businesses are not accepted. The Northrop News reserves the right to edit or omit ads. Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 62. Ads are limited to one item and one ad per person each issue. Deadline is noon Wednesday, one week before publication.

**For Sale**  
**Sewing Machine,** Necchi w/attachments & roll-a-way table, \$35. 672-3460. A  
**House,** 3-bdrm., stucco, Ventu-Park, \$12,990. 783-5117. A  
**Comb. TV-Radio,** Magnavox, AM-FM, stereo, record player, antique ivory & gold trim cabinet w/sliding doors, \$300. 545-2194. A  
**Motorcycle,** 1967 Honda S-90, Scrambler bars, \$250. 324-5422. A  
**Pool Table,** Skill, \$50. 830-6454. A  
**Wheel Covers,** 4, for 1965 Mustang, \$10. Box 2401. A  
**Range,** O'Keefe & Merritt, gas, \$25. 644-1504. A  
**Poodle,** toy, AKC reg., 3 yrs. old, weighs 4 lbs., \$75. 370-4416. A  
**Louver Windows,** 2 complete w/glass, 24x36", \$5. 675-8813. A  
**Coat,** natural ranch mink, full length, \$450. 476-1842. A  
**Corvette,** 1964 fastback, AM-FM, p/s, auto. trans., \$2,395. 823-4703. A  
**Typewriter,** Royal port. & case, inc. touch type course, \$69.50. 758-3747. A  
**Chevrolet,** 1961 Impala, 2-dr. h/top, r/h, p/s, p/b, \$700. 378-4332. A  
**House,** 2-story, 4-bdrm., 2 baths, bltins, pool, fenced play area, \$34,950. 363-4076. A  
**Bicycle,** 26" tandem, inc. matching seat covers & 2 children's seats, \$60. 294-0541. A  
**Occasional Table,** walnut, 30"x30"x14", \$20. 347-0298. A  
**Chevrolet,** 1956, Bel Air, V-8, auto. trans., r/h, \$250. 326-3438. A  
**Firebird,** 1967, 6-cyl., p/s, auto., Landau top, \$2,650. 836-2274. A  
**Range,** gas, apt. size, \$20. 676-7423. A  
**Washer-Dryer Combination,** 1957 G.E., needs shaft bearing, \$15. 833-4191. A  
**Rifle,** Universal Arms, .44 magnum carbine & approx. 2 boxes brass, \$60. 375-6337 before 3 p.m. A  
**Austin Healey,** 1957, h/top, new soft top, \$750. 677-2752. A  
**Piano Bench,** solid mahogany, hinged top, \$25. 378-1749. A  
**Pups,** English pointers, AKC reg., champ. sired, liver & white, 4 mos. & up, \$100. 713-534-3979. A  
**Socket Set,** 15 pcs., 1/2", Gilbert & Husky type, \$25. 714-776-7274. A  
**Wig,** brown, human hair, \$45. 714-528-2817. A  
**House,** 4-bdrm., lge. rumpus room, tri-level, air conditioned, wet bar, 20 minutes to Northrop P.V., \$45,000. 831-0480. A  
**Organ,** Magnus consolette, 1 yr. old, used 3 times, \$30. 343-6948. A  
**Band Saw,** Craftsman, 12", w/steel stand & motor, \$90. 633-6082. A  
**Walker-Chair,** adjust. height, foldable, \$49. 399-5413. A  
**End Tables,** 2 maple, w/lamps, \$35. 325-3452. A  
**Movie Camera,** Revere, 8mm, \$20. 631-4072. A  
**Coffee-Tea Set,** silverplate, 5-pc., Poole Old English pattern, \$250. 676-1475. A  
**Volkswagen,** 1961, rebuilt '65 eng., new clutch, \$699. 714-826-7707. A  
**Cougar,** XR-7, air cond., stereo tape, auto. trans., \$3,600. 679-7662. A  
**Freezer,** Gibson upright, 15 cu. ft., 525 lb. capacity, never used, \$250. 671-3136. A  
**Lot,** 110' x 183', 1 house on property, \$60,000. 545-4965. A  
**C. B. Transceiver,** Lafayette model HB-500, all transistor, 10 crystal transmit & receive, \$95. 714-772-2898. A  
**Corvair Monza,** 1961, 4-dr., auto. trans., r/h, \$400. 714-537-7279. A  
**Porsche,** 1600 coupe, 1959, good tires, \$1,600. 657-6964. A  
**Mustang,** 1967 2+2, p/s, p/disc brakes, 390 cu. in. eng., 4-spd., \$2,995. 325-7351. A  
**Rambler,** 1959 American, \$100. 714-837-8963. A  
**Pontiac,** 1956, p/b, p/s, good tires, \$85. 675-9789. A  
**Cemetery Lots,** Inglewood Park, room for 4 people, \$1,200. 378-9741. A  
**Simca,** 1959, 4-dr. sedan, \$200. 675-2159. A  
**Foreclosure,** 27 acres in Antelope Valley, \$2,000 equity free, take over \$100 mo. pymts., \$9,236. 862-3027. A  
**Hairdryer,** Sunbeam, 3-spd., case, used once, \$9.50. 326-9107. A  
**Ski Rack,** for Corvette Sting Ray, \$18. 644-1744. A  
**Acreage,** 2 1/2 acres, in Joshua Tree, water avail., \$1,600. 376-4787. A  
**Station Wagon,** 1963 Buick Special, V-8, r/h, p/s, \$1,195. 714-638-9396. A  
**Ring,** men's gold florentine, black onyx face w/center diamond, size 10 1/2, \$80. 431-3133. A  
**Typewriter,** Royal Deluxe Quietwriter, portable, w/case, \$30. 545-1348. A

**For Sale**  
**Sailboat,** Firefly, 12', sloop rig, alum. mast & boom, trailer, \$695. 377-5862. A  
**Tools,** Craftsman & 9-drwr. roll-a-way chest, \$200. 372-4857. A  
**Duplex,** ocean view, 20% return on down pymt. plus \$1,100 tax shelter, \$39,950. 375-7130. A  
**Triumph,** 1964 Spitfire, convt. top, \$1,250. 672-8908. A  
**Station Wagon,** 1955 Chevrolet Nomad, chrome whls., \$500. 675-5001. A  
**Honda 50,** 1964, C100, \$100. 378-4676. A  
**Trombone,** Getzen deluxe w/carrying case, \$25. 631-6480. A  
**Guitar,** elec., Fender Stratocaster, & case, \$200. 371-9925. A  
**House,** 3-bdrm., 1 1/4 baths, bltins, block wall fence, dble. gar., 5 1/2 yrs. old, \$24,950. 675-1982. A  
**T-Bird,** 1964, full power, AM-FM, a/c, \$2,000. 371-4168. A  
**Motorcycle,** Honda 150, \$325. 325-3724. A  
**Gun Cabinet,** glass door, nat. finish, shelf w/cartridge drwr., \$30. 823-2242. A  
**Stereo,** Magnavox astrosonic, \$400. 805-495-8143. A  
**Accordion,** Sonola, 120 bass, 6 treble, \$225. 839-9563. A  
**Stove,** Hot Point elec., uncrated, \$180. 788-7519. A  
**Wedding Gown,** full train, size 12, \$60. 674-8997. A  
**Dodge,** 1962 Dart, V-8, fact. air, full power, r/h, \$600. 423-4491. A  
**H. O. Train Layout,** 6 engs., 70 misc. cars, many extras, \$142. 291-0025. A  
**Guitar,** St. George, 6-string, \$35. 292-4958. A  
**Plymouth,** 1956 6-cyl. stick, radio, \$50. 323-6745. A  
**Falcon,** 1960, 4-dr., \$325. 644-6417. A  
**Iron,** G.E., \$10. 675-8360. A  
**Organ,** Baldwin, 1965, model 6, 2-manual, complete speaker set-up, \$4,500. 939-7680. A  
**Swing Set,** \$18. 329-2016. A  
**H. O. Train Set,** extra track, houses, many extras, \$35. 676-0049. A  
**Guitar,** elec., Fender Mustang w/case, \$140. 679-4245. A  
**Stove,** O'Keefe & Merritt, chrome top, \$75. 329-0504. A  
**Golf Bag,** used 3 times, \$7.50. 676-5533. A  
**Chrysler,** 1961 300G, 2 4-bbl. carbs., ram jet manifold, full power, \$695. 714-642-1433. A  
**Square Dance Dress,** size 12, \$10. 326-5912. A  
**Tape Recorder,** Muntz, for auto, \$20. 754-3037. A  
**Stereo,** mounted in maple bar, Fisher, Ampex, JBL, Thorens, \$700. 370-9138. A  
**C. B. Transceiver,** Eico 777 & antenna, \$35. 327-8927. A  
**Washer,** Kenmore, new parts & rubber, \$65. 328-8236. A  
**Chevrolet,** 1960, Impala, 4-dr., \$395. 755-8233. A  
**Bed,** roll-a-way, twin-size, w/mattress, \$15. 679-1631. A  
**Jaguar,** 1950, body needs work, \$100. 326-2779. A  
**Sleeping Bag,** regulation Boy Scout, \$5. 714-635-3315. A  
**Buttons,** antique, collected for 50 years, all or part, 10¢ to \$10 ea. 862-3095. A  
**Austin Healey,** 1960 Sprite, r/h, \$375. 377-0114. A  
**Wedding Gown,** A-line w/6' train, \$75. 325-3995. A  
**Hi-Fi,** Magnavox Castalla, solid state, 5 yr. guarantee, \$245. 672-7424. A  
**Home,** 2-bdrm., Spanish stucco, convt. den, lge. kitchen, det. 2-car gar., near Norair, \$25,900. 755-4534. A  
**Transceiver,** 1 pr. Sony C. B. walkie-talkie, w/leather cases, \$45. 677-3920. A  
**Wedding Gown,** size 10-12, off-white satin w/Alencon lace, cathedral lgth. train, matching veil, \$75. 325-7806. A  
**Volkswagen,** 1965 1500S, square back, \$1,700. 430-4407. A  
**Lot,** R-3, Salton Sea, paved streets, utilities, \$1,500 dn., take over \$35 mo. pymts., \$5,500. 883-0430. A  
**Barbell Set,** chrome bar, \$10. 676-0666. A  
**Volkswagen,** 1966 1300, \$1,250. 545-1312. A  
**Volkswagen,** 1967 1300, 6,500 miles, \$1,750. 754-6079. A  
**Trumpet,** N. H. White Co. w/case, \$85. 789-1765. A  
**Pontiac,** 1960 convt., V-8, full power, auto. trans., new top, \$295. 673-1589. A  
**Surfboard,** Gordon & Smith, 9'8", \$55. 372-4857. A  
**Auto stereo,** Muntz, plays 4 or 8 track tapes, \$35. 371-5261. A  
**Washing Machine,** Frigidaire, \$30. 328-6662. A  
**Apt. units,** 8 2-bdrm., \$77,000. 837-0989. A  
**Camper,** McDonald, 36" high, fits '67 or '68 Chev. pickup w/8' bed, \$250. 943-5317. A  
**Volkswagen,** sedan, 1967 sunroof, trans. radio, \$1,695. 454-3931. A  
**MG 1100,** 1965 4-dr. sport sedan, sunroof, \$600. 378-5494. A  
**Home,** 3-bdrm., 1 1/4 baths, pvt. yard, block wall, fireplace, walk to Northrop, \$23,950. 754-8897. A  
**Typewriter,** Royal portable w/case, \$25. 329-6728. A  
**Crib,** mattress w/matching 4-drwr. chest, \$40. 325-8752. A  
**MG,** 1959 roadster, o/hauled, \$325. 532-6109. A

**For Sale**  
**Volkswagen,** 1967, 6,500 miles, \$1,750. 754-6079. A  
**Stereo Speakers** & enclosures, freq. resp. 12-22000 cps., approx. 18"x18"x3", \$200. 326-0114. A  
**Honda 250,** rebuilt eng., \$300. 363-3843. A  
**H.O. Train Set,** Athern, mounted on 4x8 3/4" plywood, \$25. 676-8738. A  
**Dishwasher,** G.E. portable, \$50. 679-1924. A  
**Mustang,** 1967 h/top, 289 V-8, a/c, all power, sports extras, \$2,995. 498-2056. A  
**Washer & dryer,** elec., Best Lady Kenmore, \$300. 379-0828. A  
**Dodge,** 1948 club cpe., radio, new tires, \$200. 395-7368. A  
**Surfboard,** Bing 8'4", \$35. 377-6374. A  
**Power Mower,** Craftsman, rotary, 2-cy. eng., \$10. 545-1631. A  
**T-Bird,** 1963 Landau, fac. air, all power, \$1,450. 378-1026. A  
**House,** 3-bdrm., dining rm., 2 baths, \$37-900. 373-1330. A  
**Camera,** 16mm Bolex RLX w/3 lens & case, \$350. 372-7994. A  
**Drum Set,** 3-pc. Rogers, \$400. 377-5002. A  
**Spray Gun Outfit,** diaphragm compressor, hose & paint gun, \$20. 672-2370. A  
**Sectional,** 2-pc., \$50. Box. 2402. A  
**Drafting Lamp,** K&E, \$20. 671-7162. A  
**Pups,** beagle, 6 wks. old, AKC, 1 male, 4 females, \$45 ea. 675-1366. A  
**Volkswagen Parts,** \$20. 371-9532. A  
**House,** 3-bdrm., 1 1/4 baths, h/wood floors, service porch, dble. gar., 20x20 workroom, \$24,950. Box 2403. A  
**Bathinette,** high chair, car bed, many other items, \$111.50. 766-2809. A  
**Airplane,** Navion, King KX150 transceiver, Cont. 225 eng. & extras, \$6,500. 545-2463, 676-6450. A  
**Christmas Tree,** 6', white plastic, \$8. 379-3487. A  
**Guitar,** elec., amp. & case, \$55. 375-6071. A  
**Skin Diving Equip,** never used, \$143. 328-2159. A  
**Luggage,** Highlander Softside, man's suit bag, woman's dress bag, \$10. 678-0250. A  
**T-Bird,** 1962, \$795. 472-1474. A  
**Drill Press,** Delta w/hvy. duty 1/2 h.p. motor, \$85. 679-7584. A  
**Spring & mattress,** king size, \$25. 360-4303. A  
**Ping Pong Table,** folding-type, \$10. 672-8468. A  
**Aquarium,** 10 gal. & 3 gal. w/accessories, \$15 or sell sep. 325-1383. A  
**Tract-Master,** Nicki, bolt-on, for Camaro, \$25. 675-1478. A  
**TV,** 15" Packard Bell, walnut cabinet, \$15. 675-2331. A  
**Trailer,** 1964 New Moon, 50'x10' wide, \$150 for equity, \$60.37 mo. pymts., \$2,700 approx. bal. 805-944-2357. A  
**Chevrolet,** 1963 SS, r/h, a/c, p/s, p/b, \$1,250. 327-9324. A  
**Bicycle,** boy's 24" Schwinn, \$14. 329-9484. A  
**Bicycle,** girl's, \$14. 328-3306. A  
**Motorcycle,** 1962 Mustang, rebilt. eng., \$125. 755-9470. A  
**Stereo Tapes,** Ampex, 4-track, reel-to-reel, never opened, \$19. 377-6193. A  
**Great Books** of the Western World, complete set, inc. Syntopicon, \$200. 834-2845. A  
**Sailboat,** 24' Star Class day sailer, \$1,195. 326-8009, 534-0610. A  
**Sofa,** Mediterranean, 9' long, green quilted, 1 yr. old, \$295. 823-2655. A  
**Accordion,** 120 bass, w/case & 4 wheel dolly, \$100. 944-5946. A  
**Piano,** Wurlitzer, \$450. 324-1566. A  
**Pickup,** 1967 Dodge, custom cab, r/h, a/c, 8' bed, \$2,000. 644-3007. A  
**Piano,** spinet, mahogany finish, \$265. 328-7476. A  
**Bicycle,** girl's Schwinn, \$10. 676-3050. A  
**Chevrolet,** 1960 Impala, 283 cu. in. V-8, 3-spd., manual trans., r/h, \$650. 322-7215. A  
**Ford,** 1954 2-dr., \$100. 673-1707. A  
**Slip Lot,** Salton Sea, for house & sep. boat dock on channel, roads & utilities in, near yacht club, \$7,100. 714-535-1694. A  
**Volkswagen,** 1961 camper, canopy, awnings & radio, \$600. 377-8945. A  
**Organ,** Gulbransen T-100, all-transistor, 2 manuals, honey maple finish, \$1,150. 397-7476. A  
**Skin Diving Equip.,** \$500 worth, \$150. 327-4234. A

**Wanted to Buy**  
**House,** 2-bdrm., & den, near ocean in South Bay area, will pay no more than \$23,000. 320-7487. B  
**Pool Table,** honeycomb or slate. 374-4703. B  
**Volkswagen,** sedan, 1961 or newer, body condition not important, suspension, chassis, & transaxle must be in good condition. 375-8536. B  
**Camper & truck,** reasonable price, good condition. 326-3135. B  
**Bicycle,** girl's, w/20" whls., style optional. 927-0678. B  
**Tricycle,** chain drive. 325-8175. B  
**Surfboard,** 9'6". Box 2404. B  
**Motorcycle,** 50 to 100 cc's, under \$100. Box 2405. B

**Free (To Be Given Away)**  
**Pup,** 3 mos. old, German shepherd pointer, white w/black spots. 457-2949. D

**Rentals Offered**  
**House,** 4-bdrm., close to Northrop, lge. family rm., w/fireplace, 2 baths, patio, attached gar., \$225 mo. w/lease. 321-6973. E  
**Apt,** 2-bdrm., furn., 4 blocks to Northrop, utilities paid, \$150 mo. 833-2512. E  
**Apt,** 2-bdrm., unfurn., close to Northrop, gar., disp., small fenced yd., \$100 mo. 325-5705. E  
**House,** unfurn., 2-bdrm., gar. & small yard, no pets, \$110 mo. 676-0864. E  
**Apt,** 2-bdrm., bltins, closed gar., 5 min. to Nort. P.V., 15 min. to Norair, \$125 unfurn.; \$145 furn. 375-2091, 375-9397. E  
**House,** 2-bdrm., furn., dble. gar., \$145 mo. 324-7688. E  
**Apt,** 1-bdrm., 3 blocks from King Harbor, bltins, gar. cabinets, \$110. 376-9608. E  
**Vacation Cabins,** Idyllwild, 1 & 2 bdrms., fireplace, stream, patios, \$20-\$35 w/ends; \$45-\$75 wk. 754-5288. E  
**House,** 2-bdrm., unfurn., bltin stove, close to Northrop, \$125. 676-5921. E

**Rentals Wanted**  
**Apt,** 1 or 2 bdrm., furn., from Dec. 16 to Jan. 6, 1968, 2 adults, 1 baby. 324-7318. F  
**Roommate** to share rent on 2-bdrm. furn. apt. Box 2406. F

**Lost**  
**Ring,** white gold, w/pink stone, reward. 677-4359. J

**Personals**  
**My family & I** wish to sincerely thank all of our friends at Nort. Anaheim for their generosity following the loss of our home during the recent Orange County fire. BERT MILLSPAUGH. L  
**Sincere** thanks to all our friends at Norair for their thoughtfulness & kind expressions of sympathy after the death of our son in Vietnam. EARL & EVELYN PARKS. L  
**Thank** you for your thoughtfulness during the recent passing of my father. JAMES R. JARVIS. L

**For Sale or Trade**  
**Acreage,** 10 acres in California City, \$460 acre all or part or trade for house in Orange County. 714-525-2498. M  
**Volkswagen,** 1963, sunroof, AM-FM, \$900 or trade for Mercedes or Rambler station wagon. 370-9138. M  
**Cougar,** 1967, all power, \$2,995 or trade for VW. 370-9744. M  
**Lamp,** Desert Air, \$60 or trade for mini bike or go-cart. 882-0761. M  
**Mercedes Benz,** 1956 190 SL, \$375 or trade for Chevy II of equal value. 325-5931. M

## 747 ENTERTAINMENT (Continued from page 3)

measuring 16 by 30 inches. Four such units are located in each passenger compartment.

A third visual presentation concept uses 12-inch television sets suspended from overhead passenger service units, about 10 in each compartment. Video tapes, closed circuit or live television could be presented over this system. Although black and white tapes and motion pictures are used in the mockup demonstrations, Boeing engineers foresee color programs and live pickups from communications satellites eventually being used.



SERVICE TO BOYHOOD—Thomas L. McCarthy (left), manager of the Norair Administration department, receives the Boy Scouts' Order of Merit from Jack Brooks, chairman of the Centinela District Boy Scouts of America Awards Committee. Mr. McCarthy, active in Scouting since a boy, was recognized for his distinguished "Service to Boyhood."

**Rides and Riders**  
**Rides Wanted**  
**7 a.m.—3:42 p.m.**  
**West San Fernando Valley.** J. Rizzotti, Norair, ext. 2033.  
**Centinela & Inglewood** or La Brea vicinity, Inglewood. Betty Milton, Norair, ext. 2597, 672-1343.  
**7:30 a.m.—4:15 p.m.**  
**Arcadia via San Marino.** S. Pasadena, Harbor Fwy. M. M. Moore, AFPRO, ext. 2423, 446-3260.  
**8 a.m.—4:45 p.m.**  
**Wilshire Blvd. & Westwood, Westwood.** Can meet near freeway. C. Alper, Norair, ext. 1034, 1035.  
**Valley View & Lampson,** Garden Grove. T. A. Duteau, Norair, ext. 2230, 714-897-9815.  
**La Mirada Ave. & Leffingwell** or Imperial Hwy., E. Whittier. Consider anyone in Whittier, La Habra or La Mirada. Ernest J. Keraly, Norair, ext. 2563, 944-5946.

**Rides Offered**  
**7:30 a.m.—4:15 p.m.**  
**Arcadia via San Marino.** S. Pasadena, Harbor Fwy. M. M. Moore, AFPRO, ext. 2423, 446-3260.  
**8 a.m.—4:45 p.m.**  
**La Mirada Ave. & Leffingwell** or Imperial Hwy., E. Whittier. Consider anyone in Whittier, La Habra or La Mirada. Ernest J. Keraly, Norair, ext. 2563, 944-5946.

**For Sale or Trade**  
**Lot,** 90'x130', at Salton Sea, 1/2-mile from marina, \$3,200 or trade for trailer lot at Lake Isabella or Wofford Heights. 672-1716.  
**Sloop,** 35' Lion Class, fully equipped, 4 yrs. old, w/fiberglass decks, sleeps 6, \$12,500 or consider trade of smaller boat. 839-3792. M

## Norair Official Receives Major Scout Award

An award recognizing meritorious "Service to Boyhood" has been presented by the Los Angeles Area Boy Scout Council to Thomas L. McCarthy, Norair's Administration department manager.

Mr. McCarthy received the Order of Merit certificate at a recent dinner in Los Angeles honoring officers and committees of the Boy Scouts' Centinela District.

In accepting the award from Jack Brooks of the Centinela District Awards Committee, Mr. McCarthy expressed his "complete surprise" in being selected as the recipient. "Being so honored is highly gratifying," he said, "and I would like to express my deepest appreciation for the District's having seen fit to grant this award." The Order is not bestowed on a regular basis, but only when special achievement merits.



## Management Classes On Rise at Nortronics

One course in management skills is about to end, another has just begun, and still another will begin a week from today, in the continuing program of supervisory education being carried on by Stan Pine, Personnel and Management Training administrator.

Mr. Pine, along with Garnet Sandeen, Management Training specialist, has created for the Compensation and Development group, a 24-hour intensified, in-plant Industrial Relations program, designed to contribute to the management skills used by chiefs and first line supervisors.

Areas covered in the compact curriculum include Human Relations, Methods of Supervision, Leadership, and Problem Solving. Sixteen of the 24 hours are offered on company time; the other eight on personal time.

Mr. Pine stresses that the courses involve, "no wearisome lectures, but rather an interchange of ideas in an atmosphere of round-table discussion with a moderator." Hopefully, all 70 chiefs in the Southern California

Nortronics departments will have had the course in the next four to five months, with approximately 350 first line supervisors to receive the opportunity over a somewhat longer period.

Films and graphic materials are used to clarify subject matter, but no grades of any type are given out. In addition, each student is given the opportunity to evaluate the instructor, course material, and over-all program at the end of the course. A certificate of completion is issued to each student who satisfactorily completes the program, and department managers are on hand to introduce each management skills class.

The courses, offered over a period of eight consecutive working days, are alternated between the various Nortronics installations to aid in the better understanding of other supervisory functions, improve teamwork, and facilitate the problem of students having to commute. A course may begin at Hawthorne, switch to Palos Verdes on the third day, and wind up at Anaheim.

The program is significant in that it benefits the individual as well as the company. It is continually being updated and is designed to provide an opportunity to learn and practice supervisory principles directly and immediately applicable to the specific job at Nortronics, and it encourages each individual toward personal and company-oriented goals.

In actual operation, directors select nominees to take the courses. Classes will be held to a maximum of 20 students at any one time.

In summing up the course, Mr. Pine explains that it will "help chiefs and supervisors to become more effective in working with their associates from the standpoint of delegation of authority and communicating; in the area of solving problems; and working better with people-centered problems and situations."

## Winners Named In Table Tennis Tournament

Miller Ching, Jack Flannagan and Don Hall and Etta Smith were crowned champions during the annual all-Northrop Table Tennis tournament held recently in Anaheim.

This event, which drew 26 participants, was the largest ever staged under NRC sponsorship at Anaheim.

Mr. Ching of Nortronics Hawthorne won the championship singles event by downing Mr. Flannagan. Mr. Flannagan and Mr. Hall came back to take the doubles honors by defeating Mr. Ching and Kelvin McAloon. Etta Smith downed Beverly Capps to take the women's single honors.

The large field made it impossible to stage interplant events, although plans are being made to hold these events later.



**'CHECKING' THE SCOUTS**—Nortronics comes to the aid of the local Boy Scout building fund with a check for \$1,500, presented by Frank Lynch (left), Nortronics vice president and Anaheim manager. Receiving the donation is Adolph Schoepe, general chairman of the development fund for the North Orange Boy Scout Council. With them is Jim Ricketts, deputy manager of Operations at Anaheim.



**GUIDING THE ACHIEVERS** are these Nortronics Navigation department advisers to the Centinela-South Bay Junior Achievement (JA) Program. With products marketed by the

achievers are (from left) George Downs and Tony Musuraca, both JA production advisers; David Lawrence, sales adviser; and Harry Basford, management adviser to the JA company.

## Credit Union To Adopt New Data System

Northrop Credit Union will implement a modern new electronic data processing system for accounting operations over the coming yearend holiday period.

Installation of the system and transfer of accounts will necessitate some changes in normal operating procedures at this time, according to Mary Delaney, Credit Union manager.

For example, the Credit Union must close one day early prior to the holiday. Thus, the final day for transacting business will be Thursday, December 21, not Friday, December 22.

And payroll deductions for shares or repayment of loans will not be made on two paychecks each employee will receive December 22, one for a regular work week ending December 17, another for the holiday period. Routine deductions will be made on paychecks to be distributed January 5, 1968.

Mrs. Delaney reports adoption of this new system was made following a two-year survey of many systems by the Credit Union board of directors and management. Northrop Data Processing will operate the new system for the Credit Union.

## Golfers Schedule Two-Day Tourney

Golfers from Nortronics Hawthorne and Palos Verdes will hold their annual Christmas golf tournament this year on two courses. Reservations are being accepted at Personnel Activities, Hawthorne.

On December 27, the action centers at the El Dorado Golf Course in Long Beach with initial starting times beginning at 7 a.m. The following day the Montebello Municipal Golf Course, Montebello, becomes the tournament site. Starting times there begin at 7:30 a.m.

Green fees and prize fund charges are \$4 for each of the two days.

## JUNIOR ACHIEVEMENT

### '...Safety and Bookends'

For less than the cost of a first-run movie, you may save your own life on the freeway. Or, you can have bookends, fashioned in the shape of a famous work of art, for much less than you'd expect to pay for custom art. In either case, you'll be helping a Junior Achiever achieve.

Corporations, like Northrop, sponsor and/or counsel the JA companies to help young people learn the workings of American business by doing. In addition to Northrop's over-all sponsorship, several JA groups are currently being counseled by Northrop divisions, including Nortronics.

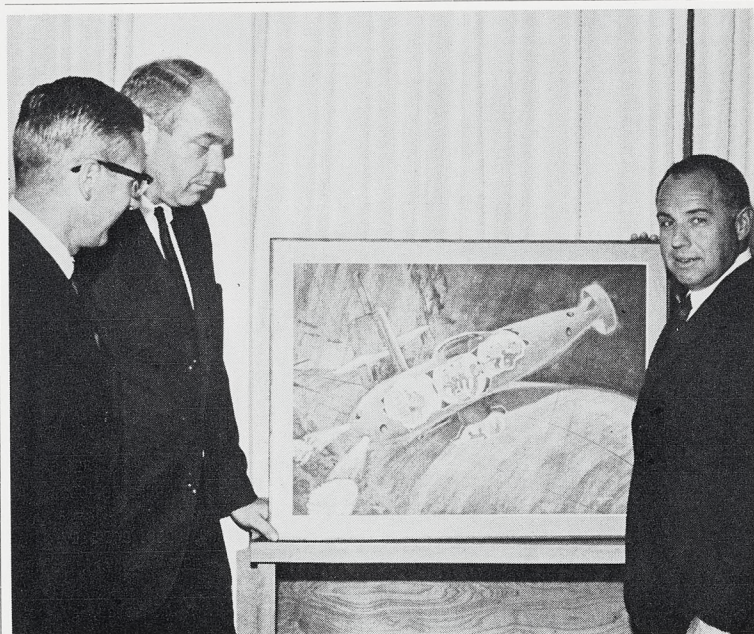
At Nortronics Hawthorne, the Navigation department is supplying advice to a typical JA company. Harry Basford advises the young management, David Lawrence offers advice in sales, and George Downs and Tony Musuraca are both JA production advisers.

HESKO, as the achievers named their company, has been in business just seven weeks and is already marketing two items for

sale to the general public. Top-of-the line is a Highway Emergency Safety Kit, from whence the company derives its name. (The board of directors felt it needed the extra "O".) The product sells for \$2 and has, packed into a neat plastic bag, the essentials for use in a freeway emergency — even down to a shiny ten-cent piece to call your favorite tow truck in case you haven't got a dime.

Other items for sale by HESKO are the famous "praying hands" by the German artist Durer. They are cast of molded plastic resin and mounted as bookends, or in the form of a wall plaque on a wooden base. The achievers have priced their hand-poured "hands" at \$3.50 for the bookends and \$3 for the wall plaque.

The first major sales campaign is now under way in a sidewalk sale directly in front of the main entrance to the Johnson Building on 120th Street in Hawthorne. Products will be on display from 3:30 p.m. to 5 p.m. tomorrow.



**DSSP RESCUE VEHICLE**—Frederick Stevens (right), Corporate vice president and Nortronics general manager, stands before a drawing of the rescue vehicle to be used in the Deep Submergence Systems Program. With him are Dr. William Parker (left), Nortronics Marketing manager, and Nick Vytalil of Lockheed, which is building the rescue vehicle. Nortronics is prime engineering support contractor on DSSP.



# NORTHROP NEWS

NORTHROP NORTRONICS

Published biweekly by Northrop Corporation, Beverly Hills, California

Vol. 25, No. 25

December 20, 1967





# \$1 Billion Annual Sales Set as 1972 Target

Northrop Corporation has set a target of \$1 billion in annual sales by 1972, Northrop President Thomas V. Jones said last week at the company's annual meeting of shareholders.

This growth, more than double the \$470 million in sales recorded in fiscal year 1967, is expected to come from an increase in sales to \$750 million by existing units of the company plus acquisitions that will add at least \$250 million to the annual volume.

"By 1972 we expect to have a sales pattern that is close to 50 per cent industrial-commercial and perhaps a little over 50 per cent

## Employees Lauded For Role in Growth

Northrop employees throughout the company were praised by Northrop President Thomas V. Jones during his address to the annual meeting of shareholders last week.

In recounting the record growth established in fiscal year 1967, Mr. Jones acknowledged the "efforts and contributions of our people across the company."

"All of this (growth) wasn't easy," he said. "It meant demanding new efforts in the maintenance of our growth schedules while at the same time instituting a strong discipline of austerity in our expenditures. We have been living on a diet of programs for profit improvement, cost reduction, and internal audit in our determination to keep growth from breeding complacency or any tendency towards extravagance."

"And I want to take this occasion to acknowledge the efforts and contributions of our people all across the company. I am glad to compliment them now because they know that I will expect the same and better performance in the future."

"The achievements of our operating divisions and subsidiaries—and I don't hesitate to call them achievements—have been considerable."

government," Mr. Jones said.

In discussing the second consecutive record year, Mr. Jones pointed out that earnings were up 20 per cent in fiscal 1967 despite a large buildup in facilities, people and financing for the Boeing 747 program for which Northrop is a major associate. Northrop is designing and producing the 153-foot passenger compartment for the huge jetliner.

Not only did Northrop record the largest sales volume and the largest aggregate earnings in company history in fiscal 1967, but, with one exception, the amount of the increases were the largest in sales and earnings in the company's history, without any benefit to sales or earnings from the 747 program.

Singled out by Mr. Jones as important contributors to the 1967 records, as well as future growth, were the F-5 and T-38 supersonic aircraft programs; advanced electronic programs such as development and production of the navigation system for the world's fastest aircraft, the SR-71; and the worldwide communications programs of a wholly-owned subsidiary, Page Communications Engineers, Inc.

In addition to a Northrop navigation system on the world's fastest operational airplane, a Northrop Nortronics system will be on the world's largest aircraft, the Lockheed C-5A.

"Our part in this program presents one of the highest technical challenges we have ever tackled, and I am glad to report to you that we have just delivered our first complete system to Lockheed and in the preliminary tests that have taken place so far it has exceeded its requirements," Mr. Jones told shareholders.

Continued growth in the F-5 supersonic fighter program was forecast by Mr. Jones in announcing that, under license from Northrop, Canada will produce 105 F-5's for The Netherlands Air Force. Northrop's share of the (See **SHAREHOLDERS**, page 5)



**SHAREHOLDERS MEET** — Northrop shareholders fill the NRC Clubhouse in Hawthorne as they hear Thomas V. Jones, Northrop presi-

dent, outline the company's goals for the future. Mr. Jones set a target of \$1 billion in annual sales by 1972. The meeting was held last week.



## CHRISTMAS GREETINGS



### To the Men and Women of Northrop:

*One of the most pleasant aspects of the holiday season is our increased awareness of others. At Christmas, we pause to realize—and express—feelings of warmth and closeness; feelings we often unknowingly lose contact with in the hurry of daily life during the year.*

*Your loyal and talented efforts have made the past year a memorable one for Northrop. More than your successful teamwork, I value the kind of people you are, and the spirit you bring to our company. I am personally proud and grateful to be working with you.*

*Mrs. Jones and I wish you a joyful holiday, and we hope the coming year is a bountiful one for you and your family.*

**Thomas V. Jones**  
President  
Northrop Corporation

### To Northrop Norair Personnel:

*The Christmas holiday marks the end of a year which has challenged our collective ingenuity and energy. During this holiday period, it is fitting for all of us to reflect upon the true meaning of Christmas and its appeal to the value of good human relationships.*

*The Christmas holiday will provide an opportunity for us to spend time with our families and friends in a relaxed environment. I know that all of us will welcome this departure from our working routine.*

*Mrs. Lloyd joins me in this season's greeting to you and in wishing you and your families a most Merry Christmas and a Happy New Year.*

**F. W. Lloyd**  
Corporate Vice President  
and Norair General Manager



**EXECUTIVE QUARTER CENTURY CLUB** —Northrop President Thomas V. Jones took advantage of recent management meeting to pay tribute to Corporate and divisional officers who have served the company more than 25 years. These men, all of whom have worked their way up in the company, have become examples to thousands of present Northrop employees who aspire to top positions through the steady progress afforded by the company's continuing interest in promoting from within. From left (standing) are: William Larrabee, Corporate vice president—Industrial Relations; Thomas H. Quayle, Nortronics vice president and manager of Nortronics' Needham Department; Charles

C. Cilley, Corporate treasurer; Mr. Jones; J. Grant Macdonnell, Corporate vice president and controller; and Vice President Alan C. Morgan, who will succeed Mr. Larrabee upon his retirement. Seated from left are: F. W. Lloyd, Corporate vice president and Norair general manager; George Gore, Corporate vice president, general counsel and secretary; Jack Mannion, Norair vice president—Manufacturing and Materiel; and Richard R. Nolan, Corporate senior vice president—Manufacturing and Administration. Another quarter-century executive, absent when photo was taken, is Robert M. McNamara, Norair vice president-Finance.

## Growing World Economy A Key to Northrop Future

If it is possible to summarize Northrop's long-range future in one breath, it would have to include that the company will be operating more and more in a growing world economy. Northrop President Thomas V. Jones gave a brief summary of this future environment in his address to shareholders last week.

"Looking at the longer range future, it is clear that for as far ahead as anybody can see, we are in for a long period during which there will be four fundamental upward pressures on the world economy," Mr. Jones said.

"First, there is the basic factor of population increase in the world as a whole. Second, we can expect an increasing demand from people everywhere for more of the better things of life. This is particularly true of the under-developed countries where the insistence of their demand amounts in many cases almost to a revolution."

"Third, is the effect of new and advancing technology everywhere. In all areas of the globe, people are aware of the promise of technology to lighten man's burden and to bring the less developed areas up to the level of the more developed areas."

"And fourth, there is the new

awareness of leaders in government and business everywhere that these technical advances are becoming more readily available to remote nations than ever before.

"Our objective for Northrop is to be in a position to serve these demands in those areas where we are qualified to contribute."

"It is probable that we are entering a period in which science and technology will be opening up new opportunities for development faster than we as a people can explore and exploit them. This is already happening in the fields of communications and transport. The outlook for both of these areas, as projected for the 1970's strongly suggests enormous expansion of global commerce and rapid development of those parts of the world which up to now have lagged behind the

(See **FUTURE**, page 5)





**TOUCHING UP THE TREE** — Putting the final touches on the Christmas tree in the main lobby at Nortronics Palos Verdes is Fanny Mae Clark, executive dining room assistant, who's been helping with this pleasant task for seven

seasons. Picking up a pointer or two on tree-in-the-lobby decorating is receptionist Diane Guiles who's experiencing her first Nortronics Christmas. The nine-foot Scotch pine will be removed Friday and sent to a needy family.

## Precision Test Equipment Installed for British Navy

An Ultra-Precision Test Equipment Laboratory (UPTE), one of the most precise and extensive inertial instrument test laboratories in the world, has been installed by Nortronics at the British Royal Navy's Admiralty Compass Observatory in Slough, England.



Mr. Wasley

Assisting was Roy Rathbun, a PPD engineering assistant.

Similar test centers have been built by PPD for the U.S. Naval Applied Science Laboratory in Brooklyn, for the National Aeronautics and Space Administration in Houston, and at PPD.

The test center will be used to

evaluate and measure the accuracy of precision inertial instruments such as gyroscopes and accelerometers used in navigation systems, the kind found in the Polaris-type submarine inertial guidance equipment.

Surrounded by a moat, complete with swans and a drawbridge, the UPTE lab is nevertheless housed in a modern building in the courtyard of an ancient castle.

The entire 15,000 pounds of equipment, which was shipped by air, took PPD one year to design and construct.

The concept of ultra-precision test equipment was developed jointly by PPD and the U.S. Navy when it became apparent that advanced inertial instruments were reaching a degree of accuracy which surpassed the capability of existing equipment to test them. "The need for this type of test equipment grew out of a requirement for an ultra-precise method

(See PPD LAB, page 6)

## Senior Engineer Commemorates Quarter Century

A Nortronics employee has received a 25-year service award for December. The diamond service pin, marking a quarter-century of service to Northrop, was presented to James



Mr. Anderson

Anderson, senior engineer at Nortronics Hawthorne. Mr. Anderson is one of the designers who has been instrumental in the development, success,

and recent delivery of the C-5 Inertial - Doppler Navigation Ground Equipment. Five Nortronics personnel attained the 15-year mark. Two from the Anaheim Facility are: Murel Jenkins and Bertram Hammett. Three others with 15-year service, all from Nortronics Hawthorne are: Mary Gillis, Wallace Owens and Joseph Yonk.

## New One-Day Closing Updates Accounting

Real time reporting, the ultimate in the submission of accounting data, has come a step nearer reality with the announcement by the Nortronics Accounting department of the inauguration of a one-day closing.

The move is designed to streamline the entire Nortronics California accounting procedure, and will eventually be adopted by all Nortronics departments, according to Robert J. Norton, deputy director of Accounting for Nortronics California.

The new system is significant in that it will make more accurate information available sooner for corporate level study. And, on a weekly basis, it will make cost information available several days earlier to financial planning organizations. A direct effect on the individual employee is the necessity for submitting time cards by the close of the day on Friday rather than Monday. To Nortronics budget analysts, it will mean quicker reaction time in controlling project costs.

To Nortronics Accounting employees, it means a more even distribution of their work-load since operation of the plan necessitates the input of financial transactions as nearly as possible to the time they occur.

Earlier in the past year, closings have required as long as seven days. As recently as four years ago, when hand posting was common, as many as three full weeks were required for closings. With the advent of real time reporting, five to 10 years hence, an instant and accurate accounting will be available on virtually a moment's notice.

The new procedure has been brought about largely through a modern accounting philosophy, and the transfer of accounting loads to data processing.

Mr. Norton places special significance upon the fact that the step means no decrease in employee requirements but does afford more detail and rapid reporting without the proportional increase in overhead cost.

Mr. Norton credits the arrival of one-day closing to the splendid

cooperation between Nortronics Management Systems and Northrop Corporate Data Processing.

## Suggestions Boost Awards In November

Twenty Nortronics employees have received \$1,571—just in time for last minute Christmas shopping—through the Suggestion Award Program, administered by Larry King.

The November awards increased 25 per cent and rose \$266 over those issued in October. The largest individual award went to John M. Espinosa, Manufacturing associate at Hawthorne. Mr. Espinosa collected \$238.70 for suggesting the development of a holding fixture for C-5 computer framework, thereby assuring more precise alignment and reducing the procedure to a one-man operation.

Other major cash awards went to Marie Parga (\$174.37), who devised a time-saving technique for feeding wires in electronic assemblies; Donald L. Glascoe (\$153), for suggesting improvement of the Norsight harness

(See photos, page 6)

wire; Esther V. Hinojosa (\$145.39), whose technique for an ordnance assembly operation was adopted; and, Willie T. Lavoie (\$111.83), who suggested a carbon dioxide system for freezing honeycomb.

Two of the suggestion winners, Mrs. Parga and Mr. Espinosa, also received the first of the "Big Nickel" awards. Big Nickels, recognition coins about the size of a silver dollar, are being given by Lockheed-Georgia to Nortronics employees, designated by their respective Nortronics managers, as those who have made significant cost-reduction suggestions to the C-5 Program.

Mr. King pointed out that "better ideas, whether they are original or not, are constantly being" (See SUGGESTIONS, page 6)

## TONSILS GO

### Assembly Line Surgery

If you think you've had your hands full during these frantic, pre-Christmas rush days, you should be Hazel or Mark Christensen. Mr. Christensen is an engineering specialist with Northrop Systems Laboratories, and Mrs. Christensen is a mother—of five girls and one boy, all between the ages of 6 and 15.

That, in itself, is not so unusual. But, when you consider that all six children just had simultaneous tonsilectomies and adenoidectomies, then you can begin to understand how things have been in the Christensen household these days.

The parents, resigned to the task, deposited all half-dozen of their children for the ordeal as they swooped down on the West Anaheim Community Hospital two weeks ago.

In what approached assembly line surgery and same-day service, the six younger Christensens parted with their tonsils and adenoids in favor of some mighty

sore throats for the holidays.

The entire procedure, in the capable hands of Dr. Richard W. Gibbs, came off without a hitch, and all six, Kristine, Barry, Pauline, Sylvia, Nancy, and Valerie, went home wanting milkshakes a day-and-a-half later.

Actually, it's all over now but the memories and Mrs. Christensen has hers. "I don't think I'd ever do it again with six," she considered, "maybe with three, but never again with six!"

Fortunately, neither Mrs. Christensen nor the children have to do it again, because the operations were a success. Through it all, the children themselves had no major complaints and proceeded without a whimper. However, Mr. Christensen recalls their one plea prior to surgery: "They all wanted the other guy to go first."

Now, they're all munching hard candy and will swallow turkey on Christmas Day.



**SORE THROATS AND HAPPY FACES** tell the story of the Mark Christensen children who all had their tonsils and adenoids removed the same day by the same doctor. Counterclock-

wise around the tree are Kristine, Valerie, Nancy, Barry, Sylvia, and Pauline. The children were all back in school just in time to be dismissed for the holidays.



## The Holiday Season Comes To Northrop



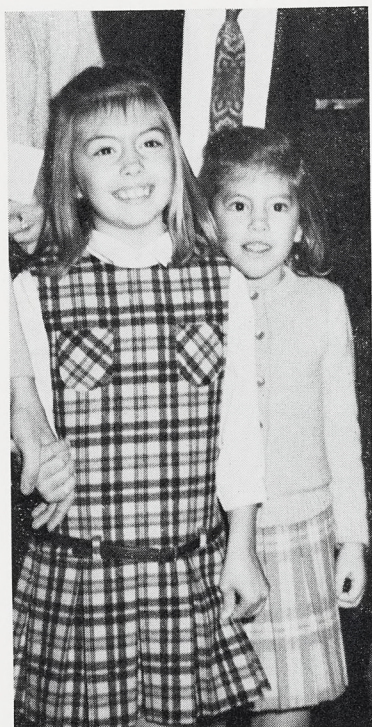
**MEETING SANTA**—This youngster might not be quite old enough to know who's holding him, but other children in the audience at the Shrine Auditorium recognize the white-bearded gentleman in the red suit. Two parties were held in the auditorium on December 17 for children of Northrop employees.

**PHOTOS BY RON MCGAFFIN  
AND RON GRISHABER**



**THE SYMPHONAIRES** — Northrop's Symphonaires lead the audience at the December 17 children's Christmas party in singing Christmas carols. The Symphonaires, comprised of em-

ployees from Norair and Nortronics, sang several Christmas songs by themselves, and then led an audience participation "sing-along." The group makes frequent appearances at Christmas.



**EAGER EYES**—At the Fullerton NRC Clubhouse, children of Nortronics Anaheim employees had their own Christmas party. At left, two little girls smile with enthusiasm over the



prospects of talking to Santa and enjoying cake and ice cream. At right, two other youngsters sit on Santa's lap as they tell him what they'd like for Christmas.



**AFRAID OF SANTA**—Not all youngsters react to a meeting with Santa Claus the same way. This young fellow found the imposing bearded figure in the red suit just a little bit scary. Later, he dried his eyes and enjoyed refreshments with the rest of the children at the NRC-sponsored Christmas party.



**WITH HIS HELPERS**—Aiding Santa Claus and NRC Council members at the Christmas parties in the Shrine Auditorium were these young ladies from an NRC-sponsored Girl Scout Mariner troop. They helped pass out presents, serve refreshments and reunite lost youngsters with their parents.



# Classified

Classified ad service is provided free of charge to all Northrop personnel. Ads for agencies, commercial enterprises and private businesses are not accepted. The Northrop News reserves the right to edit or omit ads. Obtain ad form C67 from organization clerk and mail ad to Northrop News, 170, zone 62. Ads are limited to one item and one ad per person each issue. Deadline is noon Wednesday, one week before publication.

## For Sale

**Shotgun**, Winchester, single shot, 16 ga. w/ shells, \$20. 714-871-1406. A

**Trumpet**, York Superba, gold finish, case, \$145. 714-544-4700. A

**Station Wagon**, 1967 990 Rambler, 343 cu. in., p/s, p/b, air, \$3,800. 323-4257. A

**Ski Boots**, children's size 6, dble. boots, \$7.50. 328-6662. A

**Beer Bar**, coppertone cabinet, Formica top, \$200. 324-7841. A

**Motorcycle**, 1967 Kawasaki, 120 cc, helmet, \$400. 434-0124. A

**Motorcycle**, 1962 Triumph Bonneville, 650 cc, \$600. 323-6382. A

**Chevrolet**, 1957 Bel-Air, 2-dr., h/top, 20,000 on new eng., needs some body work, \$250. 327-2831. A

**Mustang**, 1965, 289 V-8, 3-spd. trans., r/h, \$1,600. 714-529-4497. A

**Stole**, mink, silver blue, \$300. 674-4622. A

**Buick**, 1954 4-dr., r/h, p/s, p/b, \$100. 374-5712. A

**Pepsi-Cola Machine**, 1962 model, \$225. 328-2159. A

**MGA**, 1960, new eng., paint & tires, \$575. 756-1431, ext. 215. A

**Surfboard**, Vardeman, 9'8", \$65. 377-6374. A

**Oldsmobile**, 1955 88, 2-dr. h/top, B&M Hydro stick, slicks, many parts, body damaged, \$175. 672-7601. A

**Pups**, boxer, AKC, 4 wks. old, \$75 & up. 378-4676. A

**Auto parts** for Simca, generator, \$5. 329-1705. A

**Boat**, 18' catamaran, 8' beam, completely rebuilt, twin 50 Evinrudes, many extras, \$1,425. 714-532-3743. A

**Accordion**, 120 bass Scandalli, case, \$100. Box 2501. A

**Camera**, Argus C3 35 mm w/flash, sun shade, case, & 35mm wide angle lens, \$15 ea. or both for \$25. 545-1631. A

**Cabin**, 2-bdrm., Green Valley Lake, modern, \$10,000. 324-1566. A

**H.O. Train Layout**, approx. 65 misc. cars, 5 engs., many access., \$135. 291-0025. A

**Guitar**, classical, used once, \$10. 343-6948. A

**Lot**, 55'x183', zoned R-4, \$30,000. 545-4965. A

**Tire Chains**, for Volkswagen, \$5. 545-1348. A

**House**, 7-room, 1,750 sq. ft., panelled fam. rm. w/stone fireplace, 2 baths, 5 min. from Northrop, \$27,850. 321-6973. A

**Living Room Set**, Royal Danish, \$250. 805-495-8143. A

**Horse**, gelding, 1/4-type, bay, 15 hands high, \$300. 329-2016. A

**Accordion**, 120-bass Contello, \$100. 676-0049. A

**MGA**, convt., new int., tires, paint, top, eng. o/haul, \$745. 377-6193. A

**Monogram**, never used model, Riverside Raceway, \$60. 676-8738. A

**Luggage Rack**, auto top, 3'x3'x4", \$7. 714-635-3315. A

**Roller Skates**, 1 pr., ladies', prof. semi-procession whls., size 7 w/toe-stops, \$10. 754-3037. A

**Bicycles**, man's 3-spd., woman's standard, \$18. 370-9138. A

**Desk** w/typewriter-well, \$12.50. Box 2502. A

**Ski Boots**, size 10 1/2, used twice, \$50. 343-6213. A

**Dining Room Table**, Heritage walnut, 40x62, 2 leaves, 4 chairs covered w/black leather, \$200. 377-8731. A

**Lot**, 1/2 acre bldg. site, horses O.K., city water & elec., \$8,500. 783-8271. A

**Bucket Seats**, black, 1966 GTO, \$90. 370-4315. A

**Mini-Bike**, 8 h.p., dual tanks, racing seat, \$158.50. 393-7464. A

**Receiver**, Navy RBC-1 short-wave w/110 V power supply, \$55. 377-5232. A

**Station Wagon**, Corvair, r/h, auto., \$325. 326-1631. A

**Chevrolet**, 1963 Biscayne, 2-dr., 6-cyl., \$825. 541-2085. A

**Pups**, Basenji-red or tri-color, AKC, \$100-\$150. 714-776-1023. A

**Airplane**, Luscombe 8A, 1946, TTAF 1300 hrs., engine 500 smoh, full panel, \$1,895. 372-0313. A

**Book of Knowledge**, 24 vols., 7 vol. Lands & People, 10 vol. Book of Popular Science, \$50. 328-4287. A

**Ski Poles**, 5'9", steel poles, \$7.50. 644-1744. A

**Headboards**, for twin beds, pink Naugahyde, \$4. ea. 378-6325. A

**Tire Chains**, used once, fit sizes 6.40-15, 7.35-14, 7.35-15, 7.00-14, 6.50-15, \$6.50. 861-6289. A

**Oldsmobile**, 1957, 4-dr. Holiday 88 h/top, \$230. 805-495-8178. A

## For Sale

**Refrigerator**, gas, \$35. Box 2503. A

**House**, about 1,900 sq. ft., on 3 lots, 4-bdrm. & den, 2 baths, new paint in & out, close to schools, \$27,500. 379-7660. A

**Home**, 2-bdrm., convt. den, 2 baths, 1,580 sq. ft., 10% dn., \$28,500. 372-0129. A

**House**, 2-bdrm., modern, \$19,950. 376-2117. A

**Falcon**, 1963 Futura convt., stick shift, \$795. 325-8162. A

**Station Wagon**, Falcon, 1960, \$225. 375-3756. A

**Stove**, White, 4-burner, \$15. 671-7162. A

**Beds**, twin, French provincial, \$20 pr. 377-5762. A

**Buick**, 1963 Riviera, air, full power, \$1,995. 323-1888. A

**Pickup**, 1951 Chevrolet, \$250. 677-5012. A

**Chord Organ**, Estey, 2 keyboards, 7 differentials, bass foot pedal, walnut, bench, music books, \$450. 534-1676. A

**Motorcycle**, 1962 Parilla, 125 cc, \$200. 675-9702. A

**Surfboard**, Bing, 9'4", \$65. 675-2331. A

**Battery Charger**, heavy duty, \$30. 674-1825. A

**Train Layout**, 4'x8' American Flyer, 2 levels of track, 3 switches, many extras, \$35. 682-1450. A

**Porsche**, 1964, r/h, \$2,800. 377-1217. A

**Pup**, miniature dachshund, AKC, red female, \$70. 325-7806. A

**Rug**, grey, 9'x9' w/pad, \$30. 542-3607. A

**Ski Boots**, men's 10, 5 buckles, sealed sole, \$40. 374-4475. A

**Motorcycle**, 1965 Suzuki, 80 cc w/100 cc conversion kit, \$215. 714-831-4735. A

**Table**, dropleaf, solid maple, Early American, 20x36, \$65. 372-4324. A

**Chevrolet**, 1964 Impala Super Sport, full power, \$1,700. 673-9775. A

**Organ**, Conn Minuet deluxe w/bench, \$1,300. 675-0521. A

**Surfboard**, Jacob's, 9', \$50. 376-7205. A

**Honda**, 1962 Superhawk 305, \$385. 679-0945. A

**Station Wagon**, 1960 Chevrolet, auto., V-8, r/h, \$400. 714-962-5713. A

**Camera**, Olympus 35mm, rangefinder w/case, \$125. 375-7401. A

**Pickup**, 1955 Ford, \$300. 644-3557. A

**Snooper Table**, 1909 Brunswick, new cover, \$500. 863-8667. A

**Barbell Squat Rack**, York, \$18. 399-6024. A

**Home**, 3-bdrm., 1 1/2 baths, den, remodeled kit, paneled fireplace & den, within walking distance of El Camino Col., will carry 2nd, \$32,500. 324-6757. A

**Barbie Dolls**, Midge, Skipper, case & 10 outfits, \$20. 823-1531. A

**Juicerator**, Acme, stainless steel inside & chrome o/side, \$50. 679-4950. A

**Ford**, 1958 convt., \$150. 372-1445. A

**Couch**, 8 1/2', white, loose pillow back, \$50. 373-2469. A

**Chevrolet**, 1958, 6-cyl., stick shift, 2-dr., r/h, \$225. 377-9861. A

**Volkswagen**, 1965 sunroof, sedan, \$1,200. 831-6480. A

**Crib**, chest, \$90., other baby items avail. 378-4639. A

**Chevrolet**, 1962 Impala, 4-dr., h/top, r/h, auto. trans., p/s, \$875. 865-7776. A

**Station Wagon**, 1966 Falcon Futura, std. trans., 6-cyl., r/h, \$1,699. 676-8900. A

**Mustang**, 1966 h/top, 289 V-8, auto., p/s, \$1,875. 644-6487. A

**House**, 3-bdrm., 1 1/2 baths, panelled den, fireplace, remodeled kitchen, walk to Northrop, \$30,000. 675-1355. A

**Mobile Home**, 10x50, furn., awning, skirting, \$3,500. 805-498-2291. A

**House**, 3-bdrm., 2 baths, lge. fenced lot, family rm. w/bar & fireplace, assume G.I. loan, \$24,900. 830-3792. A

**Typewriter**, Royal std., \$35. 679-0980. A

**Sunbeam Alpine**, 1962, new eng., trans. & brakes, \$895. 394-1324. A

**Camera Lens**, Nikkor, auto., 28mm f:3.5, \$70. Box 2504. A

**Station Wagon**, 1961 Ford Country Squire, auto. trans., p/s, r/h, rebilt. eng., \$700. 675-7050. A

**Dodge**, 1965 Coronet, r/h, p/s, auto. trans., \$1,450. 675-2159. A

**Ford**, 1954 2-dr., \$100. 673-1707. A

**Ford**, 1962 Galaxie, new tires, stereo tape, rebilt. eng., \$950. 835-6780. A

**Meat Slicer**, rotary blade, \$5. 371-5072. A

**Pups**, dachshund, purebred, \$30. 835-0318. A

**Chevrolet**, 1954, Olds suspension & rear end, l-beam tilt front end, 327 block & headers, many extras, \$175. 644-6629. A

**Pool Table**, 8', 4 cues, \$90. 371-8929. A

**Chevrolet**, 1962 Bel Air, auto. trans., p/s, r/h, \$795. 477-0742. A

**Home**, in Elsinore, near lake, 2 lge. bdrms., 2 baths, bltin range & oven, 4 yrs. old, \$15,500. 324-5422. A

**Cooker-Fryer**, Empire auto., \$4. 675-8813. A

**Drapes**, fiberglass, 9' wide, gold, \$10. 379-3487. A

**Chevrolet**, 1963 4-dr. Bel Air, Powerglide trans., V-8, 4 new tires & rear brakes, \$1,050. 944-3794. A

**House**, 3-bdrm., family rm., 2 baths, G.I. or conventional loan, terms, \$25,900. 639-2880. A

**Wedding Gown**, full length, New York orig., \$65. 644-5935. A

**T-Bird**, 1963, p/b, p/s, \$1,000. 324-6137. A

## For Sale

**Photography Equipment**, complete outfit, Meopta-Opemus enlarger, \$65. 755-0137. A

**Home**, 3-bdrm., 1 1/4 baths, fireplace, attached gar., pvt. yard, block wall, walk to Northrop, \$23,900. 754-8897. A

**Washer & dryer**, 3 mos. old, \$90 ea. or \$180. 675-6482. A

**Dryer**, Kenmore elec. 220 volt, \$25. 675-2514. A

**Amplifier**, McIntosh MC-30, 30 watt, \$60. 834-8370. A

**Outboard Motor**, Sears 3 1/2 h.p., 2 1/2 gal. tank, \$75. 675-5978. A

**Panel Delivery Truck**, 1950 Chevrolet, new front tires, \$85. 665-2046. A

**Surfboard**, Rick, 9'4", \$60. 325-5875. A

**Gun Cabinet**, glass doors, nat. finish, shelf w/cartridge drwr., \$30. 645-2711. A

**Cadillac**, 1957 Eldorado Seville, full power, air cond., \$500. 541-1321. A

**Accordion**, Italian made, 120-bass, case, \$35. 326-0340. A

**Chrysler**, 1962 2-dr. h/top, fact. air, r/h, p/s, p/b, \$1,050. 323-6575. A

**Chevrolet**, 1958, 4-dr., Bel Air h/top, auto., V-8, r/h, \$225. 370-3090. A

**Home**, 3-bdrm., 1 1/4 baths, hdwd. flrs., lge. fenced yd., block wall, close to schools, \$175 mo. rent or \$27,000. 325-9328. A

**Sailboat**, 24' Star class day sailer, \$1,095. 326-8009, 534-0610. A

**Bicycle**, std. boy's 24" Schwinn, \$14. 328-3306. A

**Bicycles**, 2 girl's 24", good tires, \$8 & \$4 or sell separately. 676-6726. A

**Station Wagon**, 1967 Ford Country Sedan, 6-pass., 390 2V eng., a/c, Cruiseomatic, p/s, p/b, \$3,450. 324-2992. A

**Mini-Bike**, Taco, 3 h.p., \$125. 697-2445. A

**Honda**, 300 cc, 1964, elec. starter, \$375. 675-9720, 676-8898 before 3 p.m. A

**Tractors**, 2 gasoline powered, garden-type, \$50 & \$65. 867-4362. A

**TV**, 24" RCA, birch console, new picture tube & fact. reconditioned, \$50. 326-6214. A

**Slip Lot**, Salton Sea, lot for house & sep. boat dock on channel, roads & utilities in, near yacht club, \$6,800. 714-535-1694. A

**Typewriter**, Royal Royalite portable w/carrying case, \$25. 371-6328. A

**House**, 2 yrs. old, 3-bdrm., convt. den, 2 baths, fireplace, bltins, 2-car gar., patio, small sep. studio, \$43,000. 475-2101. A

**Stereo**, Magnavox solid-state Castalla, \$245. 672-7424. A

**Pontiac**, 1964 Grand Prix, a/c, full power, new tires, \$1,650. 889-0406. A

**Lapidary Equip.**, Frantom Stubby II, 2 whls., 2 drums w/3M diamond cab strips, disc buff, motor & stand, \$175. 675-9068. A

**Hide-A-Bed**, beige Naugahyde, \$75. 598-3552. A

**Rambler**, 1959, \$100. 714-837-8963. A

**Acreage**, 5 acres in northwest part of Antelope Valley, \$35 dn., \$35 mo., \$3,500. 378-1026. A

**Lawnmower**, Jacobson, \$45. 797-1907. A

**Ford**, 1957 4-dr. h/top, p/s, p/b, \$300. 371-1949. A

**GT 500**, 1967, auto., p/s, p/b, 6,000 mi., \$4,300. 675-1365. A

**Station Wagon**, 1963 Pontiac 9-pass. Catalina, fact. air, p/s, p/b, \$1,400. 371-6420. A

**House**, beach area, 3-bdrm., 2 1/2 baths, living rm., family rm., sundeck, dble. gar., \$37,500. 374-0127. A

**Motorcycle**, 1965 250 cc BSA, \$400. 644-3007. A

**Swing Set**, child's w/slide, \$15. 866-6615. A

**Band Saw**, Craftsman, 12", w/steel stand & motor, \$85. 633-6082. A

## Wanted to Buy

**Boat**, Valco U-14, alum. 327-8927. B

**Pool Table**, regulation size, 374-4703. B

**Motorcycles**, old or wrecked, in any condition. 679-4063. B

**Boat**, 18' to 20' inboard/outboard. 324-3124. A

**Lawnmower & elec. hedge trimmer**. 778-3859. A

**Boat & trailer**, 16' to 19' Glasstron, in good condition. 374-4944. B

**Extension Ladder** in useable condition. 377-7798. B

## For Trade

**Clothes Dryer**, Hotpoint, trade for power tools, furniture, slant board, surfboard. 671-8401. C

## Free (To Be Given Away)

**Pigeons**, mated or singles, various breeds & colors. 325-3452. D

**Pups**, cocker & miniature collie, 6 wks. old. 370-7121. D

## Rentals Offered

**House**, 3-bdrm., 2 baths, lge. backyard/patio, dble. gar., fireplace, 2 blks. to school, lease, W. Anaheim, \$185 mo. 714-828-2505. E

**House**, 2-bdrm., bath, fireplace, single gar., det. apt. w/3/4 bath & kit. facilities, walking distance to Norair, avail. Jan. 1, adults preferred, preschool child o.k., \$150 mo. 675-4239. E

**Apt**, 1-bdrm., unfurn., 10 min. from Northrop Haw., \$90. 674-6942. E

**House**, 3-bdrm., fam. rm., 1 1/4 baths, atrium, bltins, fireplace, 4 yrs. old, near Northrop Ventura, \$200 mo. 424-9750. E

**Apt**, 1-bdrm., unfurn., 6 miles from Northrop, pool privileges, gar., patio, \$125 mo. 671-9598. E

## Rentals Offered

**Apt**, 1-bdrm., furn., bltins, pvt. deck, pool, sub. parking, near Northrop, \$150. 670-6084. E

**House**, 3-bdrm., 2 baths, lge. lot w/ocean view, lease, \$300 mo. 832-7661. E

**Vacation Cabins**, Idyllwild, 1 & 2 bdrms., fireplace, stream, patios, \$20-\$35 w/ends; \$45-\$75 wk. 754-5288. E

**Apt**, small, furn., lady preferred, utilities furn., \$60. 754-9866. E

## Rentals Wanted

**House** or duplex, 2-bdrm., furn., or unfurn., gar., in Inglewood, Hawthorne or Torrance area, \$130 mo. 677-6387. F

## Personals

**Plastering**, small jobs. 677-0132. L

**My sincere thanks** to all Nortronics friends & the Northrop Recreation Club who so thoughtfully expressed their sympathy during our recent bereavement. ROBERT KIRKPATRICK. L

**Day Work wanted**, or odd jobs. 778-1828. L

**My sincere thanks** to all Northrop friends who so thoughtfully & graciously expressed their sympathy during the recent loss of my brother. NANCY MYHRE. L

## For Sale or Trade

**Ice Box**, 50 lb. cap. w/drain spout, \$30 or trade for #5 ski boots. 679-3288. M

**Projector**, sound, Ampro 16mm, \$150 & trade part value for .22 cal rifle, pistol or small bore shotgun (16-20 ga.) or trade for Minimat lathe. 941-1865. M

**Slot Cars** & parts, \$100 or trade for shotgun, 12 ga. 327-8477. M

**Volkswagen**, 1958 convt., complete less running gear, \$50 or trade in part for 40 h.p. Volkswagen eng., 596-7098. M

**Motorcycle**, 1967 Triumph T-120R, \$300 & \$750 approx. bal. or trade for older motorcycle. 567-2997. M

## NORTHROP FUTURE

(Continued from page 2)

American pace.

"Communications is the most immediate way to bring a country into the main stream of world affairs. For example, a device like an earth terminal station, of the type that our Page Company produces, can enable a remote nation to hitch itself to the rest of the world via the communications satellite.

"This creates a tremendous incentive for that nation to upgrade its internal communications facilities to match what is obtainable via satellite. That provides further opportunities for a company like ours.

"Hand-in-hand with communications is transportation. No longer do people accept the notion that they are destined to spend all of their lives in one place. As fares come down, and they will come down with the use of the bigger transports, more of this demand will come into the market."

## Rides and Riders

### Rides Wanted

7 a.m. — 3:42 p.m.

**Arbor Vitae or Hardy Sts. & Prairie Ave.**, Inglewood. Will walk to La Brea Ave. if need be. David R. Miller, Norair, ext. 2004, 674-2074.

**Crenshaw & Pacific Hwy.**, Torrance. Margaret Wilson, Norair, ext. 2905, 326-8037.

**West San Fernando Valley**. J. Rizzotti, Norair, ext. 2033.

7:30 a.m. — 4:15 p.m.

**Carriagedale Dr., off Harbor Fwy. at Sepulveda & Figueroa**, Wilmington. Consider riding home w/anyone working 8 a.m.-4:45 p.m. shift. Christine Remedios, Norair, ext. 2965, 835-2272.

8 a.m. — 4:45 p.m.

**Ave. 57 & Pasadena Fwy.**, Los Angeles. Karl S. Hamlin, Norair, ext. 2024, 254-4266.

## SHAREHOLDERS

(Continued from page 2)

engineering and manufacturing work for The Netherlands F-5 will be approximately \$20 million in addition to royalty income.

A version of the F-5 which will be used by the Royal Canadian Air Force is being built in Canada also, and a Spanish version of the aircraft is being built in Spain under similar licensing agreements.

In continuing his projections, Mr. Jones said that an end to the war in Vietnam should not make a dent in Northrop's over-all earnings.

"Quite the contrary, we believe that if the tremendous expenditure represented by Vietnam were to stop, it would release a great deal of pent-up demand for new programs and bring a resumption of other programs that have been slowed down.

"This will mean new increases in industrial activity and employment as well as benefits to earnings and stability," he said.

Short term forecasts by Mr. Jones included sales in fiscal 1968 of about \$500 million (compared with \$470 million in 1967) with expectations that the upward trend in earnings will continue.

Earnings have increased 20 per cent each year for the past three years. Backlog by the end of the current fiscal year is expected to rise to about \$800 million from the present \$600 million.

Earnings in fiscal 1967 were \$12,500,000, or \$2.86 per share. This was an increase of 35 cents per share over the previous year despite a 109,000 share increase in common stock outstanding.



**AEROSPACE TROPHY**—Members of the NRC Sailing Club display the Aerospace Trophy, which they were awarded this month at a dinner honoring their sailing victory over the TRW Yacht Club. From left are Dick Flude, the winning skipper; and crew members Eleanor Myers and Jim Reeder. Mr. Reeder is the club's commissioner.





**MILTON BUSTAMANTE**  
... goodwill trip



**JAMES WELLS**  
... marriage-bound



**MADELINE TRACY**  
... to Hawaii



**REBECCA HARKEY**  
... to Florida



**FRANK ANTON**  
... Mexico visit

## Weddings, Vacations on Christmas Agendas

Sweets to San Luis, Sonora, wedding bells in Hawaii and Hammond, a reunion in Ruleville, and a mid-day flight to La Paz. This is the wide range of activities planned by five Nortronics employees over the year-end holiday.

On his annual "sweets" mission to Mexico, Milton Bustamante, and his wife Evelyn, will again distribute candy to the less fortunate children of the Mexican churches in the area of San Luis, Sonora, just south of Yuma. For eight years now, Mr. Bustamante, who works in the Maintenance

department at Palos Verdes, has accepted coffee kitties from his fellow workers at Nortronics, and offerings from the United Fundamental Church where he is a minister. The donations this year will buy 100 pounds of candies and nuts for 500 children who might not otherwise know any pleasure at Christmas.

In separate and widespread ceremonies, two Nortronics people will be married during the holiday. James Wells of Anaheim Photographic services plans a drive to Hammond, Louisiana, the hometown of his fiancée,

Marie Carter. The couple will be wed in Hammond just prior to their honeymoon trip back to the West Coast.

Elsewhere, Madeline Tracy, Budget Control analyst at Palos Verdes, and her husband-to-be will board a jetliner for Hawaii along with others on the NRC tour. On their return, they'll be Mr. and Mrs. Dale Bangert winding up a honeymoon in the Islands.

Rebecca Harkey, electronics assembly inspector at Anaheim, will drive all the way to Jackson-

ville, Florida, to see her son who is in Marine Air Reserve School. After three days there, they'll motor together to a family reunion of 30 or more in Ruleville, Mississippi.

Then, there's Frank Anton, supervisor of the Publications services unit at Anaheim, and his wife, Ann. They've been studying Spanish in night school and would like to try out their conversation. So, they've planned a flight to La Paz, Mexico, on the east coast of Baja California. But speaking Spanish will probably

be a much less eventful holiday than Frank spent a year ago. In 1966, Frank, his wife, and his brother went prospecting to the Providence Mountains in the California desert east of Barstow, looking for a lost bismuth mine. They didn't find the mine, but, said Frank, "we sure saw some beautiful country." The year before, it was prospecting near the Chocolate Mountains near the Salton Sea for the Antons.

But, in La Paz next week, Frank and Ann will be, according to both of them, "looking for nothing but tranquility."

## Nortronics PPD Completes Lab Installation in England

(Continued from page 3)

of evaluating a new generation of precision gyroscopes that were being developed for the Polaris Submarine program," Mr. Wasley said. "At that time, there wasn't anything in existence that was

'good enough' to test these gyros."

The term Ultra-Precision Test Equipment (or UPTE), means just what it implies. A new standard of electrical and mechanical measurements, heretofore found only in Primary Standards Laboratories, had to be incorporated into the design of highly specialized gyro test equipment. Measurements of such minute quantities as arc-seconds of angle and thousandths of a dyne-centimeter of torque are routine for UPTE. For example, an error of one arc-second is equivalent to missing a target by 5 feet over a distance of about 190 miles, or roughly the distance between New York City and Boston. The results were that the first UPTE installation put into service late in 1963 was undoubtedly the most advanced inertial instrument evaluation facility in the world and has become the standard by which subsequent facilities are compared and judged.

In order to keep pace with a dynamic and expanding technology, a process of continuous updating and improving has been under way for the past four years and the UPTE installed in the United Kingdom, embodies the latest and most advanced thinking.

UPTE laboratories feature gas-bearing servo test tables mounted on seismically-isolated test pads, together with ultra-stable AC and DC excitation supplies, measuring equipment and monitoring equipment. Included is a primary frequency standard and coherent, multi-frequency distribution system based on either mean solar time or sidereal time. Both analog and digital (pulse torquing) loop closure facilities as well as extensive readout capability have been provided.



*PRIZE WINNERS on television's "Newlywed Game," Bob and Chris Wilson (left) look over a sport brochure describing the ski boat won by Maryann and Ted Woltanski. The Wilsons were awarded a washer and a dryer for their efforts on the show.*

### TV SHOW BRINGS EARLY YULE

Christmas came early this year for three Nortronics employees who are now television "celebrities" around the halls of Nortronics Hawthorne.

It all started when Maryann and Ted Woltanski were invited to interview for the "Newlywed Game" on ABC-TV. They were subsequently chosen to compete on national television with other newlyweds for major prizes. On the show, couples can win if they are more able to predict what their new spouses will say or do in a given situation than are the competing couples.

Maryann, a Nortronics secretary in Product Integrity, and Ted, who's with MGM Studios, found one another predictable enough to win, and walked off with a ski boat, complete with outboard motor and trailer.

One of the few responsibilities during the course of their "overnight success" was to suggest to the producers the names of some

other newlyweds who might want to appear on the program.

That's where Chris and Bob Wilson came in. Maryann filled in the proper blanks, saying that she was sure that Chris and Bob would just love to do it. So, Chris, a senior secretary in the Facilities group, and Bob, a Nortronics senior engineer, submitted to the assembly line that produces TV contestants; and in no time at all, they too were bringing home a nice prize: a washer and dryer, just for remembering when they last bowled together.

"All I had to do," said Chris, "was to think back to the date of league night. We bowled each week with the NRC."

Maryann, meanwhile, is hesitant to suggest any more Nortronics newlyweds to the game, at least for the time being. "We really ought to give someone else a chance," she laughed, "don't you think?"

## Senator Sees Bright Future For Huntsville

The economic future of the Huntsville area was discussed recently by Senator John Sparkman of Alabama, speaking before a joint meeting of management clubs from Nortronics Huntsville and two other companies.

The senator praised Huntsville for its achievement in the space program, and congratulated some of the men responsible for the flawless maiden flight of the Apollo IV/Saturn V launch vehicle in November.

He predicted continuing economic development for the area, equaling or exceeding the phenomenal growth of the past few years.

"The aerospace industry is a big industry," he said. "It is a dynamic industry, and the earth's future is in the skies. Nationwide aerospace employment is expected to rise from 1,390,000 as of last June to 1,409,000 by next March."

Huntsville, a rural, agricultural community until less than two decades ago, today is one of the largest cities in Alabama, largely due to aerospace-oriented industry.

Northrop's installation there is diversified in several product areas. Meeting with members of the Northrop Management Club were management club members from Lockheed and Brown Engineering Company.

### Speaking Course Planned

Northrop Toastmasters are accepting reservations for a special course in public speaking which convenes once each week for an eight-week period beginning January 18.

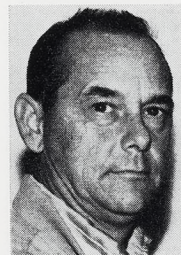
This "Speakeasy" will be held at the Sojourn Inn, Inglewood, each Thursday at 6 p.m.



Mr. Espinosa



Mrs. Parga



Mr. Glascoe



Mrs. Hinojosa



Mr. Lavoie



Mr. Fishkin

### SUGGESTIONS

(Continued from page 3)

ing sought. A potentially awardable suggestion is one that simply offers a more economical, safer, or better way for Northrop to operate; and, suggestions need not pertain to a suggestor's particular job category."

Gabriel Fishkin, one of this month's 20 winners (\$71.92), has now received nine cash awards in his 10 years with Northrop.







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